TEXTILE WORLD RECORD

JULY, 1912

Monthly Comment.

The Changing Views of Textile Manufacturers About Advertising

Ten years ago advertising to the consumer was not seriously considered by the textile manufacturer as a part of his selling plan. If he gave it any thought at all it was simply as a question which concerned his selling agent.

Some far-seeing manufacturers at last began to recognize the truth of the argument of the advertising men that the manufacturer had an interest and a valuable property asset in the character and identity of his product, something that was of value to him after the goods had been shipped to fill the orders of his selling agents. The identification of a good product, so that the satisfied purchaser may know how to get the same goods again, is an asset that the manufacturer ought to control independently of his selling agent, although it does not necessarily mean that there need be any conflict of interests between them.

The success which followed some of the pioneer textile advertising campaigns made household words of certain fabrics and knit goods and have compelled recognition of the value of advertising to the consumer by the manufacturer. Some failures have followed ill-advised plans and huge sums of money have been wasted because all sorts of foolishness has been committed in the name of advertising. Many campaigns have been started without proper preparation or cooperation on the part of the trade. Many concerns have felt that advertising meant a complete change of selling methods; that it meant elimination of the jobber or a change of methods in dealing with the selling agents.

One of the arguments frequently advanced is, that through advertising, such a strong demand can be created for goods that reluctant retailers are forced to sell them whether they wish to or not; that the jobber must carry them to meet the demand, giving an impression of the triumphant manufacturer waving his mighty advertising club over the heads of the submissive trade and compelling them to send in their orders.

What a wrong conception of the possibilities of advertising! Why should good will, the most important element in permanent successful business relations, be ignored? Why should there be any thought of compulsion, when the cordial cooperation of the retailer and the jobber can be attained with the same effort and expense. The cooperation of the retailer is just as essential for advertised goods as for those that are not advertised. The retailer is the biggest factor in the selling campaign. It is in his power to recommend your goods or condemn them. He can push the sale of your product or he may reluctantly show your goods after

he has tried to sell every other competing line that he carries.

The right sort of advertising backed up by proper plan of distribution and assistance to the retailer is of the greatest possible advantage to the manufacturer and a tremendous help to the retailer. He does not have to explain the merits of your product. The advertising has done it. Even if it has not brought the purchaser to the point of inquiring for your goods, the retailer, who has an object in selling the advertised product, finds an interested customer when he offers an advertised line.

Sixty-six New England merchants were recently asked, "Do you like to handle nationally advertised goods?" Everyone replied, "When the quality is there and there is large enough profit, we do." There is the fundamental proposition the product must be satisfactory or the advertising campaign will result in failure. It may succeed in making the first sale, but no amount of advertising will succeed in making a second sale to a customer who has been misled or disappointed. The advertiser, who puts his name on his goods, guarantees the maintenance of their quality. This is very well expressed in a recent advertisement of the Curtis Publishing Company:—"Advertising makes unforgetable and unavoidable every virtue and every fault and inevitably pins the responsibility for either upon the maker Yoking the power of advertising, which is national with the power of the retailers' prestige, which is local, the two greatest natural selling forces are combined in one well balanced team."

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Japanese Habutae

The Japanese Department of Agriculture and Commerce have recently distributed to the silk trade in the United States a circular giving an account of the official system of inspection and certification of the Japanese silk goods known as habutae. The circular is reprinted in this issue as a striking example of paternalism in government. The regulations prohibit dealing in habutae that has not been examined and stamped by the Habutae Inspection Bureau, the object being to develop and hold the export trade in these goods by preventing adulteration and a lowering of the quality of the merchandise.

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English Spinners as American Cotton Planters

The annual report of the Fine Cotton Spinners' and Doublers' Association is of special interest to Americans because of the statement regarding the cotton plantation in Mississippi, which this English corporation purchased last year. The report shows that the company had a very profitable year notwithstanding the decline in the price of cotton which brought with it a shrinkage in the value of stock on hand. The report is in part as follows:

Coming to the accounts, he had to say that on March 31 the directors found that, including the amount brought forward, but before deducting depreciation, they had £834,768 ($4,090,363) at their disposal, as compared with £831,801 ($4,076,825) in the previous year. After deducting £140,000 ($686,000) for depreciation, £110,000 ($539,000) for debenture interest, and £4,392 ($686,000), the cost of the new issue of shares, the net balance was £580,375 ($21,520), from which interim dividends amounting to £136,200 ($667,380) had been paid. The resulting balance was £444,174 ($2,176,457), in regard to which the directors recommended that £50,000 ($245,000) should be transferred to the reserve fund, increasing it to the magnificent total of £1,375,459 ($6,739,749), that the usual 5 per cent. should be paid on preference shares and a further dividend of 10 per cent. per annum on the ordinary shares, making 8 per cent. for the year, leaving £206,674 ($1,012,704) to carry forward. The assets, consisting of properties comprising land, mills, buildings, machinery, and goodwill, were shown in the balance-sheet at £5,282,986 ($25,886,631). It had been suggested in certain quarters that the Association would be well advised to state distinctly the amount at which goodwill stood in their books, and several of the directors sympathized very heartily with that suggestion, but when they came to look for the item of goodwill they could not find any. (Laughter.) Investments in subsidiary companies amounted to £2,667,621 ($13,071,343), showing a substantial increase of £710,000 ($3,479,000). The new issue of shares realized £875,000 ($4,287,500), so they had not yet spent all of it by any means.

MISSISSIPPI COTTON ESTATE

Besides paying for a splendid cotton estate in the Mississippi Delta they had built and equipped a remarkably fine spinning mill in France, and had also greatly enlarged and improved other subsidiary concerns. Nearly all the subsidiary concerns were yielding highly satisfactory dividends. Four of the directors had been to the Mississippi Delta

—and some of them more than once,—and they were the most sanguine of all in regard to the estate. The more closely they had looked into things on the spot the more confident had they become as to the future prospects of the enterprise. The estate was only taken over last June, so that apart from six months' interest on the gold bonds which were issued no further receipts from it had yet come into the accounts. The interest they had paid on the new issue of capital was more than the amount received from America, but these items might be expected to adjust themselves next year.

It was too early yet to say much about the estate, which they took over after the planting had been done, but since then no time had been lost in the erection of houses, stores, seed-crushing plant, and other structures, and they were fast completing the centralization and organization of their vast estate. The late severe floods in the Mississippi had not left them entirely alone. They had done some little damage and had delayed the work in many ways, but this was merely a temporary setback, and they were hopeful that the effects might not be far-reaching. In any event the shareholders might rest assured that they had got cotton lands second to none in the world which when properly organized would be a most valuable asset. (Applause.)

In its report of the meeting the "Manchester Guardian" says:

In submitting a resolution thanking Lord Rotherham for presiding (which was heartily passed), R. H. Brooks pointed out that the Association during its 14 years of life had made a profit, after payment of trade charges, salaries, and so on, but before taking into account the item of depreciation of rather more than 8 1/4 millions of money ($40,425,000). The average yield for each of the 14 years had been £590,000 ($2,891,000), and the yield in the year just ended had been £638,000 ($3,126,200). The effect of it all was that an original shareholder had received an average dividend of 8.07 per cent. on the amount he paid for his shares, or a total of $113 in 14 years for each $100 of shares, and an appreciation in the share value of quite 50 per cent. This, Mr. Brooks thought, was highly satisfactory and very creditable to the management.

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An Italian Cotton Mill Combine

A movement to bring under one management a number of Italian cotton mills illustrates the truth that business adversity supplies a powerful impulse toward combination in business. For several years cotton manufacturing in Italy has been depressed, despite the advantages of cheap power and low priced labor. Many of the Italian cotton mills have passed their dividends as a result either of losses or the failure to make a profit. A system of extended credits to buyers has resulted in burdensome debts to merchants and the banks. For a year or more it has been evident that drastic measures must be taken if the industry was to be saved from ruin. Organized short time was attempted and proved to be impossible. Efforts were made to secure new capital, but capitalists could not be found to supply the cash. Recently the proposition has been made to reorganize a number of the mills under one control, and thus restrict competition and at the same time reduce operating expenses. The plans for the formation of the trust are in charge of Senator Ettore Bonti, of Milan. It is believed that many of the creditors, including both banks and mercantile firms, will take stock in the new corporation, thus facilitating the financing of the enterprise. Mills with 700,000 spindles and 6,000 looms have already been included in the combine, which is meeting with general approval in financial circles.

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Cotton Goods in the Philippines

The imports of cotton goods into the Philippines for the twelve months ending December, 1911, are reported by the Bureau of Insular Affairs as follows:

	United States	Other countries
Unbleached cloths	$196,500	$79,923
Bleached cloths	1,021,465	1,207,336
Dyed cloths	955,307	1,134,307
Embroidered cloths	180	57,314
Printed cloths	940,771	567,174
Blankets	21,126	29,351
Knit goods	77,744	754,997
Coats, trousers and vests	13,228	1,289
Collars, cuffs and shirts	47,794	14,735
Dresses, skirts, etc.	14,320	2,382
Waterproof garments	24,528	12,607
All other clothing	55,361	43,795
Gum elastic fabrics	12,913	2,854
Handkerchiefs	12,281	132,477
Lamp wicks	2,504	3,323
Piques	118	19,995
Plushes, velvets, etc.	16	9,163
Shoe and corset laces	8,277	2,173
Towels	11,340	51,187
Trimmings, ribbons, etc.	1,774	66,127
Laces and tulles	578	104,821
Waste cotton	24,102	14,608
Thread and yarns	237,476	930,213
Other manufactures of cotton	166,753	35,827
Total	$3,846,456	$5,277,978

The total value of the cotton goods imported into the Philippines in 1911 was $9,-

124,434. Two-thirds of this amount, or $6,160,277, consisted of cloths, of which $3,114,223, or more than half, was supplied in the United States. Of the remaining one-third of the total, only $732,233 was supplied by the United States, the bulk, $2,231,924 coming from other countries. The table shows that the United States was far behind in supplying the Filipinos with knit goods, handkerchiefs, piques, plushes, towels, trimmings, laces, thread and yarn.

Weavers' Fines in Massachusetts

As a result of long-continued agitation an act to prohibit the fining of weavers for imperfections became a law in Massachusetts last year. It provided that:

> No employer shall impose a fine upon an employe engaged in weaving for imperfections that may arise during the process of weaving.

Soon after the enactment of this law complaint was made in the Second District Court of East Worcester against the Lancaster Mills, Clinton, Mass., charging a violation of the law by reason of the fining of a weaver named Henry Dilling. This was made a test case and submitted to the jury upon the following agreed statement of facts:

During the week ending December 2, 1911, one Henry Dilling, a male adult, was employed as a weaver of cloth by the defendant corporation, the Lancaster Mills, at Clinton, Mass., and he had been so employed for several months. Posted in the weaving room of the defendant corporation, and forming the basis of compensation for weaving, were placards of which the annexed exhibit is a copy. When Dilling was paid for weaving done during the week ending December 2, 1911, it was found by competent inspectors that a certain portion of his work came within the class of work known as second quality, and that the weaver was responsible for such condition. He was paid at the rates named in the posted notice for such work as he had produced of first quality, and for such work as he had produced of second quality. It is not claimed that there was any unfairness in the grading of the work or that said Dilling was not properly paid on the basis of the posted schedule. It is also agreed that Dilling could read and write, and was working with knowledge of the terms of his employment, as set forth by said notice and accepted the same, and that he had previosuly been paid for first and second quality work in accordance with the terms of said notice. It is also agreed that the amount by which the wages was decreased as a result of the classification was less than the loss to the defendant, resulting from the production of second quality cloth by the weaver.

It is agreed that the foregoing are facts upon which the government seeks a conviction under Chapter 584, Acts of 1911, in the case of Commonwealth vs. Lancaster Mills.

The jury in the lower court brought in a verdict of guilty, and the defendant appealed to the Supreme Court, which has overruled the lower court and decided that the act of 1911 did not prohibit the system of graded piece work prices in force at the Lancaster Mills. The higher court holds that the act of 1911 did not repeal the law of 1909, which provides that:

> The system used by manufacturers of grading the work of a weaver shall not affect or lessen the wages of the weaver except for imperfections in his own work; and in no case shall the wages of those engaged in weaving be affected by fines or otherwise unless the imperfections complained of are first exhibited and pointed out to the person whose wages are to be affected; and a fine shall not be imposed upon any person for imperfect weaving unless the provisions of this section are first complied with and the amount of the fines are agreed upon by both parties. Whoever violates the provisions of this section shall be punished by a fine of not more than $100 for the first offense and by a fine of not more than $300 for each subsequent offense.

EXHIBIT.

Lancaster Mills—Price List for Weaving—40½ inch Looms.

Cloth Construction — Date, March 30, 1908.

No. of Shuttles	No. of Harnesses	Picks per Inch	Reeds Dents Per Inch	Yds. Per Cut	Width	Style of Goods	Price for Quality 1st	2nd
2	2	64	32	90	29	Gingham	1.00	.50
3	2	64	32	90	29		1.02	.51
4 or more	2	64	32	90	29		1.04	.52
2	4 or more	64	32	90	29		1.04	.52
3	4 " "	64	32	90	29		1.05	.53
4 or more	4 " "	64	32	90	29		1.06	.53
2	2	66	36	120	34	Shirting	1.41	.71
3	2	66	36	120	34		1.42	.71
4 or more	2	66	36	120	34		1.43	.72
2	4 or more	66	36	120	34		1.43	.72
3	4 " "	66	36	120	34		1.44	.72
4 or more	4 " "	66	36	120	34		1.45	.73

The Supreme Court decided that both statutes are valid under certain conditions, and the conditions in the Lancaster Mills were covered by the act of 1909 and were not made illegal by the law of 1911. The attorneys for the Lancaster Mills made the following claims:

(a) Dilling had been employed by the defendant for several months.
(b) He could read and write and was familiar with the terms of a placard posted in the mill stating the basis of his compensation and the deduction from the wages paid for first-class work that would be made for second-class work.
(c) He not only knew the terms of the notice, but had accepted the same.
(d) He had previously been paid for second-class work at the placard rate,—competent inspectors having found the work defective and Dilling responsible for the defect.
(e) The act complained of is paying him at the placard rate for second-class work done during the week ending December 2, 1911,—proper inspection having found the work imperfect and Dilling chargeable with the imperfect condition.
(f) The foregoing circumstances show a contract between Dilling and his employer respecting the consequences of imperfect weaving as clearly as it could be shown by a written instrument,—a contract, too, contemplated by the statute of 1909 and conforming to its provisions.

These conditions were held by the Court to constitute a valid contract between Dilling and his employers, and thus legalize the graded piece-work prices under the act of 1909.

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Soudan Cotton

Judging by the glowing reports issued from time to time by the British Cotton Growing Association regarding the prospects for growing cotton in various colonies, there is little doubt but that in time the supply of British cotton will be ample for the requirements of British mills. Only a few months ago we were gravely informed that India offered the best opportunity for increasing the supply of British-grown cotton. Now the information is given in fully as impressive a manner that the Egyptian Soudan offers the finest cotton growing proposition in the whole world. This is on the authority of J. A. Hutton, chairman of the British Cotton Growing Association, who has visited the Soudan recently and studied its cotton growing possibilities. At the annual dinner of the association last month Mr. Hutton gave an account of his observations in Africa, from which we take the following:

In the Soudan we have the soil, the climate, and the water. We have, in addition, in the administration of the Soudan one of the finest sets of men in the Empire. We have, too, one great asset in Lord Kitchener. It has been proved beyond dispute that the Soudan can grow cotton of excellent quality. What is now needed is the capital for railways, for irrigation works, and for commercial development, and also expert assistance and advice. As far as the latter point is concerned, the services of the Association are at the disposal of the Government. As regards the capital for commercial development, which will run into several millions, I think we can rely on the assistance of F. Eckstein, Lord Lovat, Mr. Macgillivray, and their friends. The capital for railways and for irrigation works should, I think, be found by the Government, and when I say the Government I mean the British Government. (Cheers.)

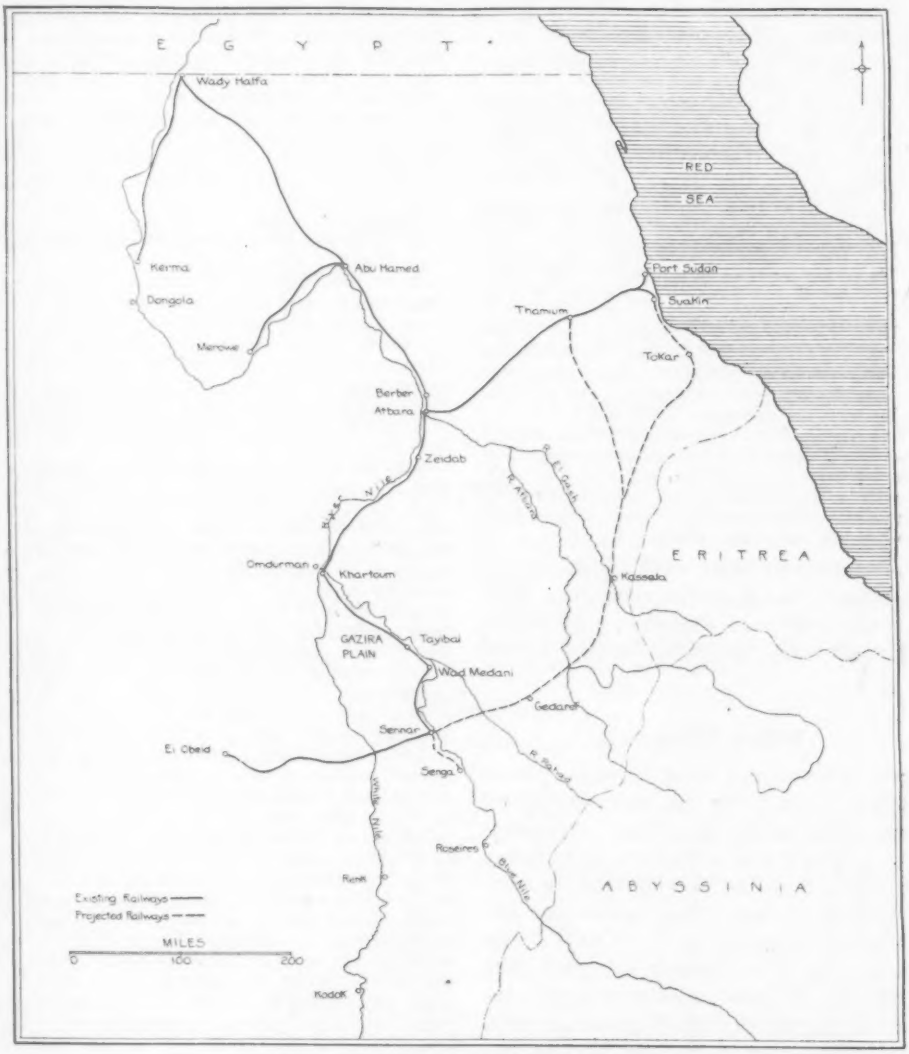
I think, therefore, we can reasonably go to His Majesty's Government and ask them to find this money, and I have not the least doubt it will pay them to do so, for in a very short time this capital is bound to bring in a handsome return. (Hear, hear.)

Let us, however, recognize that really large amounts of capital will be wanted, and some of it very soon, say £8,000,000 ($40,000,000) for railways and irrigation works and £4,000,000 ($20,000,000) for commercial developments. We must, however, be reasonable. The whole of the capital required is not wanted immediately, and I would suggest as a first step that we should go to the Government and ask them to advance on loan to the Soudan Government for railways and cotton development in the Soudan the sum of £1,000,000 ($5,000,000). If we meet with a favorable response, as I confidently hope we shall do, I think it would be only reasonable for us and our friends to find a similar amount for the commercial development of the country. (Cheers.)

You may reasonably ask—Supposing this capital is found, what quantity of cotton can we expect to obtain from the Soudan in the immediate future? Well, it's very easy to prophesy, but of one thing I am sure—judging from the knowledge and the experience acquired during the ten years' work of the British Cotton-growing Association, I have no hesitation in stating, without fear of contradiction, that in the Anglo-Egyptian Soudan you will obtain larger and quicker results than in any other part of the British Empire. If the capital is found, and if everything is pushed on as rapidly as possible, I see no reason why in ten years from now the Soudan should not be producing annually at least 250,000 bales of excellent cotton. After our investigations I and my colleagues are convinced that the Anglo-Egyptian Soudan offers one of the best cotton-growing propositions in the British Empire, and in the Gezira we have the very finest proposition in the whole of the world.

Mr. Hutton's plan to secure a government appropriation of $40,000,000 for promoting

cotton growing in the Soudan brought forth rousing British cheers from the cotton spinners gathered around the banquet table in Manchester. While equal enthusiasm is hardly to be expected from the British cabinet, the statesmen in charge of national expenditures will undoubtedly be cheered by the assurance that the whole amount would not be wanted immediately.



SHOWING THE GAZIRA COTTON FIELDS IN EGYPT.

The raw cotton imported into Canada from the United States amounted to 74,978,410 pounds, valued at $9,810,955.

THE SOUTHERN TEXTILE ASSOCIATION

The meeting of the Southern Textile Association was held at Greensboro, N. C., on June 29. After an address of welcome by Mayor Murphy and response by T. B. Wallace of Greenville, S. C., President Stone delivered the annual address. A visit was then made in the forenoon to White Oak Mills, where the party was entertained at luncheon by Caesar Cone, president of the Proximity Mfg. Co., Greensboro, N. C.

The session in the afternoon was devoted to the reading of papers, and to the transac-

tion of the regular business of the Association. After adjournment there was an excursion over the electric lines, affording an excellent view of the mills in the vicinity of Greensboro. Stops were made at the Odell Hdw. Co., and at the plant of the Central Electric Co. A smoker at the Court House in the evening was thoroughly enjoyed by the large number in attendance.

The papers read at the afternoon session were as follows: Relations of Mill Officers to Management, by Caesar Cone, president of the Proximity Mfg. Co., Greensboro, N. C.; Operating a Spinning Room, by T. M. McEntire, superintendent Foray Mills, Gastonia, N. C.; Ideas on the Card Room, by W. S. Dean, Concord, N. C.; Some Phases of Welfare Work, by Bernard M. Cone, treasurer, Proximity Mfg. Co.

SOME PHASES OF WELFARE WORK

By BERNARD M. CONE, Treasurer Proximity Mfg. Co.

Everyone connected with cotton manufacturing in the South is familiar with the wonderful progress made during the past twenty years. Twenty years ago, Eastern goods were regarded as the standard, and Eastern mills always got a better price than Southern mills for the same class of goods. Today all this is changed. Southern goods are manufactured of fully as good quality as Eastern, are made in the same patterns, are given as good a finish, are put up in packages fully as acceptable to the trade, and command the same prices.

The question naturally arises, what has brought this all about? At a superficial glance, one might be inclined to say that it was the introduction of modern machinery and methods, and it is true that these have played an important part. But even more important, and perhaps the greatest single factor to which all this improvement is due is the development in the South of a class of mill operatives possessing equal skill, equal competency, and an equal sense of responsibility to that of the mill laborers in Eastern mills.

They are almost without exception native born Americans, descended from original settlers, from the strong and sturdy stock that made possible the war of the revolution and the establishment of a free and independent nation. They have inherited qualities of thrift and industry, of loyalty and faithfulness, which have only needed opportunity and encouragement to blossom forth and produce results. This they have now been receiving for many years. The Southern manufacturer has been quick to realize his dependence upon his help and the necessity of thorough mutual understanding and cooperation. He realizes that there are duties and obligations on his part, and almost to a man stands ready to perform those duties in a spirit of fairness and friendliness.

It must be remembered that the relation of a cotton mill to its employes, particularly in the South, are different from those in almost any other kind of manufacturing plant. In most other manufacturing establishments, the relations of the parties do not extend beyond the factory fence. The employer has met his full obligation when he furnishes a pay envelope with the full amount of wages earned. Where his employes go after they leave the factory premises, what they do, or how they live, is no concern of his. With the majority of Southern cotton mills, the situation is entirely different. The help live in cottages owned by the company, they buy the greater part of their food and other necessities from the stores owned or controlled by the company; they send their children to schools maintained by the company; and the greater part of their lives are lived in the company's mill village.

The first duty of the mill management, and one which every successful mill manager is active in performing, is to keep up his village. He must provide cottages with sufficient room, sufficient light and ventilation, conveniently arranged. He must think of the comforts of his people, and keep the tenements in repair; leaky roofs and smoky fireplaces must be looked after. Double floors should be provided to keep out winter cold, and every house should be periodically painted inside and out.

These are all details which the mill management must look after, for there is no one else to do it. More progressive mills go further than this. They do not stop at the bare necessities. They set out shade trees along their streets and in front of the homes, build good sidewalks and keep them in condition; distribute flowers, shrubs and grass seed free or at a nominal cost, send company teams to do the plowing and encourage the people to beautify their premises by offering prizes.

Then it is the duty of the mill to keep the village in a sanitary condition and to look after the general health. Proper drains and ditches must be laid and must be kept clean. Stagnant water should not be allowed to accumulate. Every spring the edges of all mill ponds and marshes should be sprayed with kerosene to prevent breeding of the malaria bearing mosquito. Outhouses should be built of a sanitary type to keep out flies and prevent the spread of infection and they should be looked after most rigorously. The supply of drinking water is usually a matter under the jurisdiction of the mill, and is very important. Where possible, bored wells ought to be provided. Where there are open wells, they should be cleaned regularly. If a case of contagious disease arises, it must be looked after and isolated and every house in which there has been such a case should be disinfected. All of this work requires the employment of a regular force of outside hands, and where a mill is in position to afford it, it will certainly be found to be a paying investment.

As further precaution against disease, all school children should be vaccinated, and though it often requires patience to overcome the prejudices of some parents, in the interest of general health, this rule ought to be rigidly enforced. Recent medical investigations have also shown that many

children suffer from impaired growth, deafness, deficient mentality and other ills as a result of adenoids, enlarged tonsils or the hook worm. Those who are looking far enough ahead to think of the efficiency of their employes in the rising generation, will do well to consider these matters, to have the school children submit to medical examination and to encourage parents to have their children treated where it is found necessary.

In Southern mill communities, the duty of educating the children usually falls on the mill management. Sometimes this is done in cooperation with the county schools, or by supplementing the short term usually afforded by the latter. But many of the larger mills have built their own school buildings and maintain independent schools. These schools are open the full nine months' term, are graded the same and furnish the same education as the city schools. Indeed it is safe to say they are superior as a rule and more effective in their results than the average city school. The teacher's duty does not end with her class room work. She is required regularly to visit the home of every child under her care. She becomes acquainted with the parents and plans and advises with them and cooperates for the welfare and advancement of the child. This mutual interest is further stimulated by frequent public exercises and entertainments at the schools and by mothers' meetings, at which the teachers and the mothers meet together, go over the work and confer about what is being done and what is best to be done. Some of the mills maintain free kindergartens in connection with their schools. There is a difference of opinion as to the value of the kindergarten. Some think the child at the kindergarten age too young to be subjected to discipline and restraint. But the work in the kindergarten is of the lightest sort, mostly songs and play and the training of the fingers. The teachers in the graded schools find that children who come from the kindergarten make much more rapid progress in their studies.

In addition to these schools and kindergartens, many of the Southern mills maintain a separately organized welfare department. This department is usually in charge of young women employed by the company, who have been specially trained for this sort of work. It is difficult to give a comprehensive statement of just what this work includes. Often it depends largely on the personality of the welfare worker and her assistants These young ladies establish themselves in the heart of the village. A club house, a mill tenement, a room over the company's store or other convenient quarters are given over to them and becomes the nucleus of their work. Here they hold sewing and cooking classes, for it is essential that the welfare worker should be able to teach both sewing and cooking. They get up classes for the school girls, other classes for the mill girls, usually giving Saturday afternoons and one or two nights in the week to the latter, and still other classes for grown up women. They teach plain sewing and dressmaking, embroidery and fancy work, hat making, rug making, basketry and raffia work. In fact, anything which any member of their classes shows an interest in or desire to make, they take up with enthusiasm. They organize social clubs, give parties and entertainments, valentine parties, Washington's birthday parties, Easter egg hunts, picnics and ice cream suppers.

They have garden classes and tomato clubs; teach the children how to raise fruits and vegetables and then how to can and preserve them. They visit every family in the village and form close, personal friendships, advise the women on their domestic problems, often help them to make their purchases judiciously and economically. They make the new families in the village feel at home; visit the sick, look after the poor. In short, they go about helping and befriending, elevating the aims and ideals of the people and constantly inspiring them to higher standards.

Many overseers and superintendents remember the day when front yards were ornamented with tin cans or old bottles stuck half way into the ground to form an edging, and many a yard contained an egg tree, the dead limb of a tree stuck in the ground with egg shells on the protruding branches. This was regarded by some as very ornamental. Soon after the coming of the welfare worker, all this ugliness disappeared. No rule was made against it, no order given to remove it, but the people were inspired with higher ideas of the sublime and beautiful and of their own accord came to discard these things. They began to clean up premises, to plant green lawns and flower beds, to burn their trash and make their dwellings more homelike and attractive. They began to dress more neatly, to choose more wholesome foods, to lead clean, healthy lives and to fill their spare hours with useful pastimes and recreations. They came more and more to patronize the village library, to attend illustrated lectures of travel in foreign countries and to take an interest in what was going on in the world about them.

The welfare department of a mill is chiefly occupied with the women and children, for through these the tone and standard of the community is established. Many mills do a great deal independently for their boys and men. They organize clubs and provide recreation rooms. Some of the mills have branches of the Young Men's Christian Association. Some have gymnasiums, bowling alleys, baths. Some have established mutual benefit associations for their employes. The Southern mill operatives are great lodge folks and have their own chapters of the various orders. They are great church people and the churches in any mill village deservedly receive a great deal of help and encouragement from the mill management, for the church going element in a mill village, as a rule, includes the best element in the community.

Many of the mills have their own brass bands and ball teams. These afford not only a great deal of healthful recreation to those who participate, but are the pleasure and the pride of the whole village. The maintenance of all these things, the keeping up of street forces, of the schools, the welfare department, the club houses and recreation rooms, all requires a large outlay on the part of the mill and some have been inclined to hesitate and ask whether it is an investment that pays. Things like these are not always intended to pay. There are lots of things men do for the pride and satisfaction of doing them, and the enjoyment they get in watching the results.

But as a matter of fact, it is an investment that does pay. The result does not appear in dollars and cents, but nevertheless it is there and it is in the profit and loss account, even if you cannot see it or itemize it. It appears in the increased efficiency of the entire working force. People who live good, clean, healthy lives, who are happy and contented in their home surroundings, who live in a cheerful environment, who have interests and ideals outside of their routine work, who take a pride in the institution they are connected with, work better, more intelligently, more loyally and more effectively than they themselves would. The best mill families seek out communities where these advantages are possible, they settle down there and stay there, and when good times are too good, so good that there is a scarcity of help and not enough to go around, it is the mills with the reputation of treating their help best that have the least trouble in keeping their looms and spindles going.

OPERATING A SPINNING ROOM

By T. M. McENTIRE, Supt. Loray Mills, Gastonia, N. C.

The experience of the spinning room overseer is as varied as the number of spinning rooms. Those of us who have spent some time in this department of mill work will differ as to many details, still every one who has been successful has found there are certain important things in operating a spinning room that must be recognized and dealt with in only one way. One of the most important things in operating a spinning room is that the overseer should be a good manager of help. He should be a machinist, not simply one who has served an apprenticeship for a stated length of time, but one who can understand and apply the principles of machinery to any machine, one who can recognize the merits of a new invention and then so govern its operation that its best service may be obtained. One who does not possess this qualification may by employing skillful help and other devices appear successful for a time, but sooner or later the false shell which surrounds him will give way, and prove to him the necessity of mechanical ability in the operation of a spinning room.

An important factor in this department of the mill work is the help. The day is near at hand when the mill with the most skillful help is the mill that will be the most successful in its output, and nowhere does this count so much as in the spinning room, owing in a great measure to the large percentage of children in this department. There is a mutual respect that should exist between the overseers, second hands, section hands and help, and which goes to make up in a great part the success of the room. The overseer, second hands and section hands must at all times so conduct themselves as to command the respect and confidence of those under them and of the people of the community in which they live. Unfilled promises, partiality and immorality on the part of the overseer or second hand makes a good organization impossible, and without a good organization there can be no success. Similar conduct must be demanded of the help. Here in the South we have the best help in the United States, and the responsibility for their not being a great deal better than they are rests on those in authority over them. We are continually trying to move our help from one mill to another. We should discourage this as it is detrimental to the help and to the mill.

In order to obtain the best results the frames should be lined and leveled every eighteen months to two years. Steel rolls should be taken out and cleaned every eight or ten months. If this is done as it should be, we would save from a fourth to a third h. p. per frame. The cost of lining and leveling a frame should be about $1.20 per frame. The cost of cleaning the steel rolls for two years should be about $3.00. This will clean the steel rolls three times in two years. The proper way to plumb spindles is to let the rail run up as high as it will go. The spindle plumber should be in possession of two sets, one for setting his rings at the top and one for setting them at the bottom. After the spindle plumber has placed all of his spindles at the top, the rail should be run as low as it will go. After the ring rail has been run to the bottom, the spindle plumber should loosen the nut which holds the bolster to the spindle rail, and pack with paper between the bolster and spindle rail where the ring comes nearest to the set. When the proper amount of paper is placed under the base at the bottom the spindle will be perpendicular, or in other words in the center of the ring. After the spindle has been adjusted, the guide wires should be set to it. The operation should be repeated in fifteen to eighteen months. It will require about half the time to plumb the spindles the second time that it did the first. The cost of plumbing the spindles and setting the guide wires is usually about $2.50 to $3.00 per frame.

Tying the bands is a very important thing. It is essential that all the spindle bands on a ring frame should be as near the same tension as it is possible. The bands should be fairly tight, but not so tight as to put excessive strain on the spindle. If this is allowed it will prove detrimental both to the spindle and to the bands, and more power will be required to drive the spindle. On the other hand, the bands must not be so slack as to prevent the spindle being driven the correct number of revolutions, as this causes soft spun yarn and soft built bobbins and the ends will be constantly breaking down, increasing the waste

Doffers should not be allowed to break down more than two to five ends to the side in doffing. The overseer should not allow the doffers to let the frame stop before they are ready to doff. Every doffer should piece up his own ends. The doffer should be arranged four to the set, and not over six to the set, with one head doffer. The overseer should not allow the frames to run any length of time without piecing up the ends where they have been doffing. About once a week the overseer should have the doffers to clean all strings and yarn from the spindles. If this is properly done it will help the overseer to reduce the waste.

WOOL GROWING IN ICELAND

BY SIGURGEIR EINARSSON

Geologists tell us that the process of creating the earth stopped with Iceland, in other words that Iceland is the newest land in the world. It was settled in A. D. 874 by some wandering Norsemen who found the country well suited for homes. They sent back reports to their old home praising the fertility of the soil and were soon followed by a large number of their countrymen. These settlers were for the most part rich Norwegian chiefs who had fled from the tyranny of their king and who settled in this new home. About the same time a number

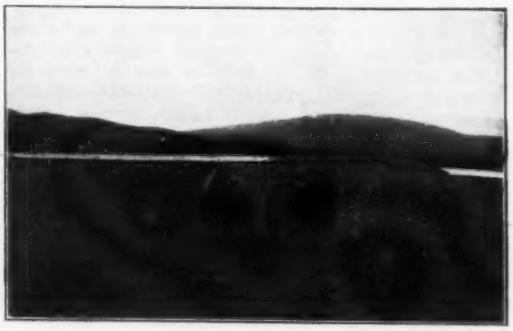
ICELAND SHEEP COMING FROM THE MOUNTAINS IN THE AUTUMN.

of Celts immigrated to Iceland and the two races amalgamated to form the Icelanders. The first settlers were heathens, but in the year 1000 Christianity was introduced by Althing. Dating almost from the first settlement by the Norsemen, Iceland has been a republic. The Parliament, which was called the "Althing," was the highest court of justice in the country as well as the legislative assembly. It was presided over by a speaker whose duty it was to read the law publicly. He was also president of the republic. Violent domestic dissensions combined with treachery in the ranks of the Ice-

AN ICELAND EWE AND LAMBS.

landers themselves enabled the Norwegian chiefs to conquer the country in 1262 to 1264. About a century later Norway, Iceland and Denmark were united, all three being ruled by the same king and since that time Iceland has been subject to Danish rule.

The literature of Iceland has shown a continuous development. In proportion to population Iceland has more old and new literature than any other nation in Europe. About the middle of the twelfth century a number of Icelandic scholars began to write historical works, among which a leading place is held by the eddas, and the famous Iceland sagas, which excite our admiration for the heroes of long ago. In spite of her subjection by a foreign power, Iceland has retained its own language, which is practically identical with the old Norse language



ICELAND SHEEP.

spoken in all of the Scandinavian countries at the time that Iceland was settled.

Iceland has a population of about 85,000, the country being thinly populated and the towns small and few in number. The capital is Reykjavik, with about 12,000 inhabitants. Here are located the residences of the government officers, the principal schools, museums of the country, and a library containing 90,000 volumes. The three cities next in importance are Akureyri, Isafjordur and Seydisfjordur. The country is very mountainous, the center of the island being a table land formed of glacial sands and unhabitable tracts of lava. Along the coast there are valuable strips of low land which in many places extend far into the country. Iceland is not as cold a country as its name indicates. The scenery is beautiful, the wild and magnificent being blended in the most imposing manner. There are great volcanoes, immense glaciers, imposing mountains, solidified torrents of lava and grassless deserts alternating with green field, bubbling brooks and imposing waterfalls. The mountain sides are covered with thickets. Lakes dot the sides of the mountains, the whole combining to create an indescribably charming scene in pleasant weather.

The principal occupations of the Icelanders are fishing and cattle raising. The export trade for 1910 was made us as follows:

Split fish	$1,500,000
Wool	332,000
Butter	70,000
Eiderdown	25,000
Herrings	86,000
Cod oil	76,000
Shark oil	15,000
Mutton, salted	258,000
Ptarmigans	6,000
Fox skins	1,000
Sheep skins, salted	144,000
Sheep skins, tanned	60,000
Ponies	68,000

A FLOCK OF ICELAND SHEEP.

There are 850,290 sheep on the island and for a long time this industry has been one of the principal sources of income for the common people. Unfortunately they have not given sufficient care and attention to the breeding of the sheep and the growing of the wool. The sheep are the old Norse breed, practically unmixed with other breeds. For a long time the government has prohibited the importation of sheep from foreign countries for fear of the introduction of dis-

ease among the flocks. The breed of the Icelandic sheep varies from flock to flock. The industry is in a prosperous condition. In 1804 there were only 218,818 sheep in the country. This number had grown to 402,508 in 1823 and to 687,978 in 1901. The sheep are exported and also slaughtered for domestic consumption. In winter the flocks are kept in stables and fed with hay. By the end of April they are turned into the fields to graze. The lambing season begins about the middle of May, the weaning season beginning at the end of June. Before weaning the ears of the lambs are branded to indicate the owner. Each farm has its own ear mark, which is officially registered. After the weaning season the mother sheep are kept near the farm house and milked every morning and evening in a movable sheep pen. The lambs and dry sheep are driven into the mountains to graze without the care of a shepherd. In September men are sent out to round the sheep up and drive them down to the farms. For a number of years many of the farmers in the northern part of the island have given more attention to the care of the sheep and the preparation of the wool for market. As a result the wool has brought a much higher price and the industry has become more profitable. These farmers shear the wool from the sheep, whereas in the southern and western part of the island the wool is generally pulled from the sheep. When the sheep have not had good fodder in the winter the wool is of slower growth and is easily pulled. When the feed is better the growth of the wool is more rapid and it is necessary then to shear it. A few of the farmers in the South have begun to take greater care of their flocks. The wool is sheared and pulled from the sheep in May and June and then washed by the farmer at his home. It is washed first in hot water and a solution of alkali, then rinsed in the brook or river. When the sheep have been kept in stables during the winter, the wool contains more dirt than when the sheep are left unhoused. In some part of the island the sheep graze on sandy soil. It is necessary then to wash the wool very carefully in order to remove the sand and dirt. Iceland wool is similar in grade to Lincoln wool. After being washed the wool is spread on the ground to dry, then packed and transported in wagons to the trading stations where it is sold. The clip is exported in July and August, most of it going to England and Copenhagen.

MORE ABOUT TYING KNOTS

Editor Textile World Record:

In your April, 1912, issue on page 134 you have republished an article on knots, by the French writer, Edmond Leclerk. Some of the most important knots of all are not mentioned in this paper, but

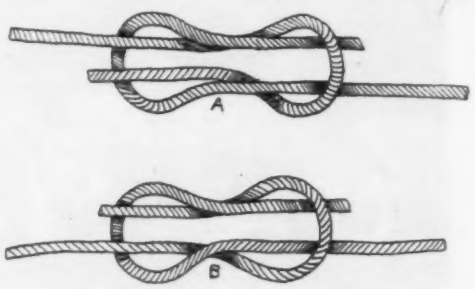


FIG. 1.

what I particularly write about is to draw attention to an important principle which is seldom mentioned in connection with knots, namely, that, for certain kinds of knots, the principal parts of the two cords that are being knotted, known as the standing parts,

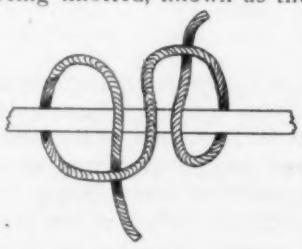


FIG. 2.

FIG. 3.

must pull from the same side if the knot is to hold. If they pull from opposite sides the knot will "upset" and slip.

Fig. 1 shows a square knot tied in two ways. When the standing parts are on opposite sides, as at A, the knot will slip and pull apart. The knot, B, is tied properly; the short ends remain in position while the

knot is pulled upon, and the long ends draw it together firmly, and without slip. The difference will be apparent if a trial is made.

Some of the important knots which have been omitted are the bowline, the fisherman's bend, sometimes called the anchor bend, the fisherman's knot, and the figure

FIG. 7.

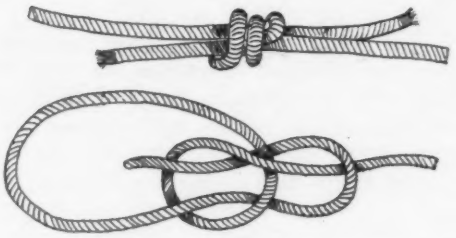


FIG. 4.

eight knot. Each of these has a special function. One may have occasion to use one or more of them every day, and no other knots suit their respective purposes better, if as well. With these, and with the square knot and the "clove-hitch," a man might go through life and never feel the need of another kind of knot. The clove-hitch, meaning cleft or cloven, which is the same as two-half-hitches, and well known to all seamen, is described in M. Leclerk's article as the "mason's knot." This hitch, shown at Fig. 2, is very useful where a rope is to be tied midway on a pole or spar, or on a taut or standing rope or stay. After being drawn tight, one turn jams on the other when pulled laterally, thus overcoming the tendency to slip sideways, while on a direct pull, it is immovable. It can also be undone with reasonable ease. Fig. 2 shows how this hitch is formed. The two-half-hitches, Fig. 3, is the same knot as the "clove-hitch," so far as its construction goes, but is tied differently. In making the latter, the end of the rope is passed a couple of times round the spar and the hitch is formed, but the two half-hitches are usually thrown over the top of a vertical post or upright, or over the ends of a cleat. The painter of a boat is often secured in this way to a post on a pier, or a halliard belayed to a cleat. These hitches are rapidly and surely made, never slip, and are readily unfastened. More than two may be made if desired, but two will hold firmly.

The bowline, Fig. 4, is the best, surest and neatest loop for the end of a line. If the loop were to be cut apart, the knot would resolve itself into a weaver's knot. One great advantage about the bowline is that the bight, through which the standing part finally passes to the hand, does not jam when the knot is drawn tight, and so it can be undone very easily. This will be apparent from the drawing.

The fisherman's bend, or anchor bend, Fig. 5, may be used for securing a rope to a spar or to a ring, such as an anchor ring, and it is in this latter use that its chief value lies. As an anchor lies at the bottom with its cable attached, there is a constant tugging and veering motion going on that could be fatal to any insecure fastening.

FIG. 5.

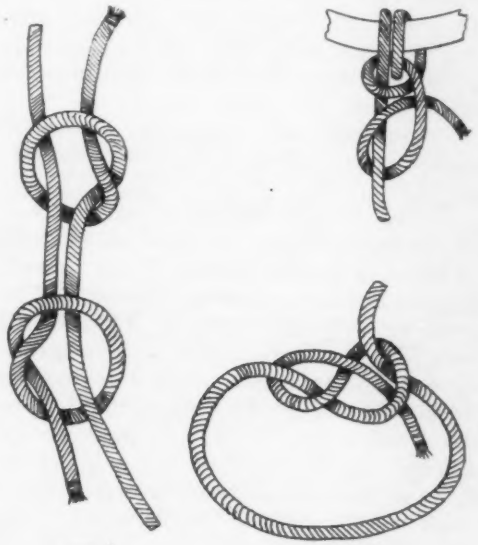


FIG. 6.

FIG. 8.

This excellent bend simply cannot be worked loose, and yet no knot is easier to untie when so desired. In making it, two turns are taken round the spar, or through the ring, the end is passed between them and the ring, and a half-hitch is then taken round the standing part. On account of its simplicity and reliability it has been called the King of all Knots. The term "bend" is

usually applied to those knots which may have to be used for cable or heavy rope, and which literally has to be bent. Thus there are the anchor bend for cables, and the carrick-bend for securing standing rigging. Lighter ropes or cords are used in the forming of knots.

The fisherman's knot, Figs. 6 and 7, is invaluable in the joining of two ends of a rope, cord, or anything which is slipping or unpliable. Note how difficult it is to tie firmly, so that slippage cannot occur, two ends of a waxed sash cord, or two ends of a gut leader such as fishermen use, by any of the ordinary knots. A fisherman may well rejoice in this knot when he has broken ends of gut to piece up. It is made by laying the two ends side by side, one overlapping the other by a few inches. Then the end of each one is tied round the standing part of the other in a single overhand knot, and these are drawn tight. Next the two standing ends are pulled upon, and the two overhand knots slide towards each other, till they come together in a way which makes slippage out of the question.

The manner of forming the fisherman's knot is shown at Fig. 6; the completed knot at Fig. 7.

The figure eight knot is so called because of its shape, Fig. 8. Its chief value to the landsman is in parcel tying. When a bundle is found and a paper wrapped around it, the one who is tying it, holding it down with hand, elbow or arm to keep it from springing apart, passes a cord under it and ties the end in a figure eight knot round the standing part, which is then drawn tight and holds the package with reasonable firmness while the paper at the ends is being folded in, after which the tying of the bundle is proceeded with. This knot will slip under stress, which is desirable should it, for instance, have been drawn up too tight, or in undoing the parcel, but it holds just firmly enough to give the packer the use of both hands in his operations once the knot has been drawn up. The figure eight knot is shown at Fig. 8 with the cord of a bundle passed through it.

There are a score or two more of most excellent knots, hitches and bends, some designed for special and some for general uses, but the object of this communication is to point out what knots it is essential for the man in the street to have at his command. In conclusion I may remark that the comment on the apprentice's knot, two ends joined and tied together in a single overhand knot, that "its size and the facility with which it slips make it unworthy of use anywhere" is not entirely justified. Clumsy it is, and difficult to loosen when once got tight, but, if these objections be not material, it is a convenient way of tying together two cords of very dissimilar size, one fine and one coarse. Very few knots but will slip under such conditions and this one can be made to hold very firmly.

James Chittick.

MOVING PICTURE SCREENS

Editor Textile World Record:

Can I get a white oilcloth, seamless, 12 or 14 feet wide for moving picture screens? Is the cloth made this wide and do you suppose I could get it in large quantities? Weymouth (2044).

I understand that Jas. Williamson & Son, Lancaster, England, make oilcloth in large widths and direct inquiry might be made of them. Presumably "Weymouth" has satisfied himself that white oilcloth serves his purpose satisfactorily. The opinion of some parties in the cinema business is that oilcloth will not do. The point is mentioned incidentally.

The great desideratum in projection screens for moving pictures seems to be whiteness combined with opacity. In a number of English picture halls the image is thrown upon a wall which is smoothed and whitened for the purpose. Calico screens hemmed and fitted with tapes or brass eyelet holes, and described as well-shrunk, are sold in sizes up to 10 feet square without seams. Larger squares can be obtained with a wide width in the center and two seams near the sides. Calico has the recommendation of cheapness, but is not so opaque as the more expensive double-roller screens in which a fabric of stout canvas is specially treated with some white medium and made impenetrable to light. These opaque canvas screens are made up to 16 feet square.

Wessex.

Analysis of the Tariff Board Report on Schedule K

By SAMUEL S. DALE.

(Continued from June.)

ENGLISH AND FRENCH EXPERIENCE

Reports have just been received from two men, one at Bradford, England, the other at Amiens, France, who at my request made an investigation of the conditioning process in their respective countries and obtained the opinions of men experienced in the management of conditioning houses. My Amiens correspondent says that "le condionnement des laines a l'etat brut ne se pratique que tres rarement." (Grease wool is rarely conditioned.) His statement is confirmed by the official statistics of the Roubaix and Tourcoing conditioning houses, which give the quantity of tops, yarn and noils tested, but make no reference to scouring tests of grease wool.

My Bradford correspondent went into the subject in considerable detail, making a careful inspection of the processes at the Bradford conditioning house. He reports that in 1911 the Bradford establishment made 237,967 tests, representing 95,930,026 pounds of wool and goods, and that of these tests, 222,998 were for moisture and only 3,464 were "scours for fat and oils." Moreover, these 3,464 scouring tests included tops, noils, wastes and yarns, the scourings of raw wool being comparatively insignificant.

Another fact of importance is that the wool samples are usually drawn by the submitting party and not by the representatives of the conditioning house, the latter thus taking no responsibility for the essential question as to whether the test lot represents the entire lot. Another point is that some of the scouring tests at Bradford require two days. The tests for moisture are made at Bradford with only two pounds drawn from each bag. A Bradford conditioning house manager with long experience told my correspondent that the only way he could suggest for obtaining fairly correct scouring tests of large lots of grease wool was to install full-sized scouring, drying and air-cooling machinery and testing as many bales of each lot as might be considered necessary. And after this was done the grease left in the wool could be determined only by a chemical analysis. This is the judgment of men experienced in testing textile materials at Bradford, the most important wool manufacturing center in the world. Against this we have the ambiguous statement, page 397, that "the Tariff Board has investigated the matter, with the aid of the Bureau of Standards, and has reached the conclusion that it is not only possible, but it is a relatively simple matter, to test wool by sample at the time of importation."

I have made some inquiries regarding the conditioning of textiles by the Bureau of Standards and am informed on the best authority that their work thus far has been mainly a study of methods, that the work has not progressed sufficiently to enable them to fix a definite schedule of fees for public service, that they are still working on the problem of sampling from large lots and have not decided on a standard method, and that the determination of the shrinkage of raw wool could be made on samples as large as three to five pounds. The Bureau's work in conditioning textiles is still in its preliminary stage, and while it may in time reach a point where its officials will be able to report from experience on the practicability of administering a tariff based on the scoured weight of grease wool, it has not yet arrived there.

Although the statement of the Tariff Board just quoted is ambiguous it is calculated to convey the idea that the shrinkage of large lots of grease wool can be easily determined. As such it is unfair to Congress and to all who desire a prompt and wise revision of schedule K, and it is also unfair to the Bureau of Standards, whose officials, I am sure, would not endorse such a proposition.

My own experience, the statements made to me by many experienced wool dealers, the reports from Bradford and Amiens, and the information obtained regarding the work of conditioning by the Bureau of Standards at Washington, all confirm the conclusion already reached that the plan to base specific tariff rates on the scoured weight of grease wool is hopelessly impossible.

IMPOSSIBLE AND UNDESIRABLE

And for what purpose is it proposed to adopt the impossible scoured weight proposition? Why in order to establish a tariff system under which the inequalities would be far greater than they are now under the specific tariff on grease wool, whose serious defects are no longer denied.

CARPET WOOLS

The recommendations of the Board regarding wools of different classes are somewhat conflicting. They decided that the scoured basis should be adopted for wools of Class I and Class II, but when they faced the problem of carpet wool they concluded that the grease basis should be adopted. The report states, page 414:

> "The objection hereinbefore conceded to lie against the flat specific on the scoured content, as in the case of Classes I and II, becomes in the case of this heterogeneous mixture of grades, qualities and values a much more serious one."

The objection to which the Board refers and which has already been quoted is, page 397:

> "Objection is made to a flat rate upon the scoured pound on the ground that it would not be fair to subject wools of varying value to a uniform rate of duty. It must be conceded that there is some reason in this."

As a matter of fact the scoured values of wools of Class I and Class II vary far more than do the scoured values of carpet wools, so this objection applies with less force to carpet wools than to the others, although a scoured weight tariff is unde-

sirable for wools of any class. The Board suggests, page 414, that:

> "This problem might be settled by a single specific rate, regardless of either value or condition, as meeting best the problems of administration and revenue, and at least relieving the carpet trade of much of the uncertainty inherent in the present system."

This recommendation of a flat specific rate on carpet wool can easily be subjected to the acid test by applying any such rate, say, 7 cents a pound, to the different grades. A list of these grades was obtained from one of the leading dealers in carpet wools, with the approximate prices on March 15, 1912. The list follows with the ad valorem equivalents of a 7-cent specific rate:

Name	Price cts. lb.	% ad val. 7c. lb.
SOUTH AMERICA		
Argentine-Cordova	12	58
Chili-Valparaiso	12	58
ASIA		
East India Kandahar white, washed	20	35
Kandahar yellow, washed	17	41
Vicanere white, washed	21	33
Joria white, washed	24	29
Yellow washed	17	41
Heavy low yellow, washed	12	58
China filling in grease	12	58
Combing in grease	14	50
Washed	24	29
Thibet in the grease	12	58
Persia, white Bushire in grease	12	58
Black Bushire in grease	11	64
Bokhara white washed	17	41
Black washed	12	58
Trans-caspian washed	18	39
II clip washed	14	50
Khorassan I clip washed	17	41
TURKEY IN ASIA		
Caramanian in grease	12	58
Jaffa in grease	12	58
Erzeroum in grease	10	70
EUROPE		
Corsican in the grease	11	64
Sardinian in the grease	12	58
Cyprus in the grease	12	58
RUSSIA		
Georgian I clip in grease	15	47
II clip in grease	16	44
Lambs in grease	18	39
Turkestan greasy	12	58
AFRICA		
Very coarse hairy wools in small quantities	12	58
ASIA MINOR		
Aleppo in grease	12	58
washed	23	30
Orfa in grease	12	58
Washed	23	30
Awassi and Karadi in grease	12	58
Washed	20	35
Damascus in grease	12	58
Washed	23	30
Angora in grease	12	58
Washed	21	33
Kashgar washed white	20	35
Syrian pieces	11	64
Smyrna in grease	12	58
Mexican	13	54
EUROPE		
Austrian Zackel in grease	12	58
Washed	23	30
Pulled	15	47
Scotch blackfaced in grease	14	50
Haslock pulled	21	33
Greece unwashed	12	58
Germany and Holland heath greasy	11	64
Heath washed	14	50
Iceland washed	22	32
Pulled	18	39
Portugal-Oporto washed	20	35
In grease	8	88
Russia-Calmuc in grease	9	77
Crimean washed	14	50
Donskoi washed	23	30
Donskoi in grease	12	58
Lambs	19	36
Kasan washed	17	41
Spain & France Pyrenean unwashed	12	58
Pyrenean washed	24	29
Turkey-Albania	12	58
Bosnian	12	58
Kasabachia	12	58
Salonica unwashed	12	58
Salonica washed	24	29
Servian skin wool	16	44

This is the operation of the tariff recommended by the Board for carpet wool. The rates vary from 29 to 88 per cent. ad valorem, the highest being 200 per cent. above the lowest. Comment would seem to be unnecessary. In fact it was hardly necessary to test the Board's recommendation as it is now well known that a specific duty on a material varying as widely in condition and value as wool does, is indefensible.

The Board's recommendation of one rate for so-called carpet wools, and a very different rate for all other wools is seriously objectionable because of the impossibility of classifying wools according to the uses to which they are to be put. Under the present classification of the Payne bill a large quantity of wool is imported at a low duty as Class III (carpet) wool and used in the manufacture of goods other than carpeting. This is admitted in the report, page 413:

> "These wools (Class III) are chiefly used in the manufacture of carpets and rugs; but an inquiry by the board develops the fact that while the great bulk of the consumption is devoted to such use, certain grades are in demand for other purposes, such as the manufacture of felt boots, horse blankets, coarse upholstery goods, robes, paper maker's felt aprons, and wadding for gun cartridges. The better grades also find their way into various blends in the manufacture of coarse cloths, such as the cheaper grades of cloakings, overcoatings, coarse tweeds and cheviots, and occasionally into worsted spinning mills.
>
> "The truth seems to be that the demand for the so-called carpet wools for better than carpet-

making purposes depends largely upon the price of clothing wools."

So it will be with any reasonable classification intended to admit carpet wools at a rate different from that placed on other wools. It follows that under such an arrangement the manufacturers using so-called carpet wools for goods other than carpets, will obtain an advantage over other manufacturers making competing goods from wool subject to the higher duty.

COMPENSATORY DUTIES

The report devotes much space to the compensatory duty on goods made wholly of wool and on pages 621 to 626 gives a detailed account of how this duty could be adjusted to provide compensation for a specific tariff based on the scoured weight of wool. The shrinkage of wool in the various processes of manufacturing, and the value of the various by-products from noils to shear flocks are calculated with apparent exactitude. To provide compensation the rate per scoured pound of wool is increased 10 per cent. when applied to tops; by 19 per cent. when applied to yarn; and by 42 per cent. when applied to cloth. All this leaves the impression that here we have a method by which compensation for the compensatory tariff can be adjusted to the duty on wool with scientific accuracy. This method, however, is based on the false assumption that the cost of the raw material in wool goods is increased by exactly the amount of specific duty imposed on imported wool. But this is not the case. The specific duty, bearing no uniform relation to the value of the wool, restricts the supply of different grades unequally. A new, unstable and usually higher price level is established behind such a tariff. And the difference between the domestic and the foreign price of wool is nearly always less than the tariff on the wool imported. That has been the rule under the various wool tariffs since 1867. The last three years have supplied a striking illustration of it, for during a considerable part of that time the domestic price of wool has been but little above the foreign price although a specific duty has been in force with ad valorem equivalents varying from 35 to 550 per cent.

This would be the condition under a specific duty based on the scoured weight of wool, for which the Tariff Board has calculated a compensatory duty with such seeming accuracy. Suppose that the 30,644 bales of scoured wool already referred to are offered for sale in foreign markets and that a duty of 20 cents per scoured pound is in force in this country. The American manufacturer would run his eye down the list and find that on 26,419 bales, or 86 per cent. of the entire quantity, the duty varied from 50 to 333 per cent. ad valorem; that on 4,018 bales the duty varied from 100 to 333 per cent., and that the average duty for the entire 30,644 bales would be 67 per cent. ad valorem. This would mean that the low-priced wools were excluded from the country, and that the only wools available for importation were those of the best quality and highest price, adapted for high-priced fabrics.

NO COMPENSATION FOR EXCLUSION OF RAW MATERIALS

The manufacturer would thus be forced to use such substitutes as were offered for sale in the United States, such as the limited quantity of low grade wools, shoddy, wool by-products, and cotton. Under these conditions the compensatory duty framed by the Tariff Board would be but a mockery. No tariff on goods can compensate a manufacturer for a duty which deprives him of raw material. With a duty of 20 cents per scoured pound, wool costing abroad 25 cents a pound scoured would cost 45 cents duty paid. The Tariff Board says: Put a specific duty of 22 cents a pound on tops, 23 3/4 cents a pound on yarn, and 28 1/2 cents a pound on goods to compensate the American manufacturer for this 20-cent duty on wool. But the trouble with this plan is that the business will not stand the 20-cent rate. The foreign prices of different grades of wool are determined by their respective adaptability for supplying the wants of consumers. When specific duties interfere with the extension of such natural adjustment of values to the United States the result is not, as the Tariff Board assumes, a uniform increase in the American market by the amount of the specific duty. Such interference results instead in a new adjustment based on the adaptability of the restricted American supply of raw materials for supplying the wants of American consumers. And it is these conditions that the American manufacturer must meet. He must make his goods out of low-priced materials in order to sell them at prices the consumer can pay. The so-called compensatory of 28 1/2 cents a pound becomes under such conditions largely protective and thus the scoured weight duty leaves us just where we are now, with low-priced raw materials excluded from the country and the tariff on goods largely in excess of requirements because of the concealed protection in the compensatory duties.

PROTECTIVE DUTIES ON WOOL MANUFACTURES

That part of the report dealing with protective duties on partly and wholly manufactured goods is confused and conflicting. Great emphasis is placed on what the Board considers to be the serious defects of ad valorem duties, the following from page 709 being a typical passage:

> "One serious disadvantage of ad valorem duties is that the amount of duty increases with every increase in the price of the article. In other words, at the time when prices are high and when the consumer would be most benefited by the active competition of foreign fabrics, the duty automatically increases. Conversely, the amount of duty diminishes when prices fall; that is, when the consumer least needs relief and when the competition of foreign manufacturers is most injurious to the home producer."

The report then goes on to point out the supposed advantages of specific duties and the disadvantages of an ad valorem tariff for purposes of protection, page 709:

"From the point of view of protecting the domestic manufacturer by equalizing the difference in cost of production at home and abroad by means of tariff duties, the system of specific duties is the natural and logical method. Market values fluctuate continuously according to the prices of the raw material. The cost of manufacturing this material, however, remains relatively constant, and does not change with such fluctuations. That is, the difference in the cost of production is a relatively constant quantity and consequently a duty assessed in ad valorem terms would inevitably be at one time in excess of the difference in the cost of production and at another time less than the difference in the cost of production, according to the temporary and speculative changes of the market."

Then the report condemns specific duties for goods with a saving clause for yarn, pages 709 and 710:

"The successful operation of a system of specific duties, however, depends upon the possibility of classifying the articles on which duties are levied in definite terms familiar to the trade and corresponding to actual difference in cost of manufacture. Many efforts have been made to find an accurate basis for such classification for manufactures of wool, but thus far not with success so far as woven fabrics are concerned. In the case of yarns the problem is relatively simple. Yarns are comparatively well standardized and their cost varies in a certain regular relation to the fineness or count of the yarn. It is a simple matter then to adopt the specific system in this particular case. A duty can be assessed on No. 1 yarn and be made to increase by a certain proportion with each additional count of yarn. The proper additions could furthermore be made for doubling, dyeing, hard twisting, etc.

"But no satisfactory method of classifying woven fabrics, in the case of manufactures of wool, with a view to the assessments of specific duties has yet been devised."

These conclusions, if acepted as final, deprive us of any satisfactory basis for protective duties, but the report supplies this want on page 710, by adopting the ad valorem system which it had so severely condemned on page 709:

"It would seem, then, that in so far as woolen and worsted fabrics are concerned the only present practicable method of levying duties is to adopt in some measure a system of ad valorem duties. Such ad valorem duties would necessarily be in addition to any compensatory duties levied because of the duty on the raw material."

It is difficult to understand the state of mind in which a system of protective duties is condemned on one page and then adopted on the next without referring to the objections previously stated, or adopting any measures whatever to overcome them. The market fluctuations which made an ad valorem tariff on goods so objectionable and so burdensome to the consumer on page 709, would have exactly the same effect under the step-ladder ad valorem duties recommended on page 710.

RAW MATERIAL AND MANUFACTURING COSTS

Without wasting time in further consideration of the contradictory reasoning of the Tariff Board let us look at their recommendations regarding protective duties, page 18:

"There are grave difficulties, however, in attempting to place a flat ad valorem rate on manufactures of this kind. In certain grades of fabrics the value of the material is a very large proportion of the total value and the cost of the manufacture relatively small. In the case of expensive and finely finished goods, on the other hand, the cost of material becomes less important and the labor or conversion cost becomes an increasingly large proportion of the total cost. The result is that a flat rate, adequate to offset the difference in cost of production on the finer goods, must be prohibitive on cheaper goods. Conversely, the rate which merely equalizes the difference in cost of production on cheaper goods would be inadequate to equalize the difference in the cost of finer goods. A fair solution seems to be the adoption of a graduated scale under which an advalorem rate assessed properly on goods of low value should then increase progressively according to slight increments of value, up to whatever maximum rate should be fixed."

This recommendation is also found in the President's message, page 6:

"No flat ad valorem rate on such fabrics can be made to work fairly and effectively. Any single rate which is high enough to equalize the difference in manufacturing cost at home and abroad on highly finished goods, involving such labor, would be prohibitory on cheaper goods, in which the labor cost is a smaller proportion of the total value. Conversely, a rate only adequate to equalize this difference on cheaper goods would remove protection from the fine-goods manufacture, the increase in which has been one of the striking features of the trade's development in recent years. I therefore recommend that in any revision the importance of a graduated scale of ad valorem duties on cloths be carefully considered and applied."

The President and the Tariff Board are mistaken in their assumption that the cost of manufacturing is less on low-priced fabrics than on high-priced goods. This is not in accordance with mill experience. To show what the truth is regarding the proportions of raw material and manufacturing in the cost of different grades of wool goods, the figures for eighty-six fabrics made at the Merchants Woolen Mill, Dedham, Mass., during the two years, four and one-half months from December, 1891, are given below:

COST OF GOODS

No.	Goods.	per lb.	raw mat. %	mfg. %
1497	Beaver	$0.453	36.7	63.3
913	Beaver	.473	41.5	58.5

2103	Chinchilla	.476	55.5	44.5
1491	Beaver	.488	41.8	58.2
2105	Chinchilla	.502	54.0	46.0
1452	Serge	.504	59.7	40.3
912	Beaver	.506	47.2	52.8
1382	Beaver	.507	43.9	56.1
463	Beaver	.523	52.5	47.5
509	Beaver	.534	52.6	47.4
1415	Beaver	.582	51.0	49.0
1226	Cloaking	.586	59.9	40.1
1415	Beaver	.588	51.3	48.7
901	Beaver	.588	52.4	47.6
1486	Beaver	.598	43.2	56.8
1429	Beaver	.598	52.4	47.6
908	Beaver	.600	53.6	40.4
903	Beaver	.601	51.5	48.5
1382	Beaver	.605	50.6	49.4
1423	Beaver	.605	52.5	47.5
1422	Beaver	.606	53.9	46.1
1219	Beaver	.609	53.3	46.7
904	Beaver	.615	54.8	45.2
1436	Serge	.631	52.4	47.6
461	Beaver	.633	46.0	54.0
904	Cloaking	.642	52.0	48.0
4608	Kersey	.647	50.3	49.7
1219	Beaver	.650	53.4	46.6
1418	Melton	.652	64.1	35.9
1428	Serge	.652	52.5	47.5
1487	Beaver	.663	58.0	42.0
1476	Freize	.664	71.0	29.0
910	Freize	.687	69.6	30.4
907	Beaver	.689	56.5	43.5
1459	Cloaking	.701	57.7	42.3
1438	Melton	.715	68.1	31.9
4608	Kersey	.77	60.0	40.0
1483	Kersey	.723	59.7	40.3
1428	Beaver	.741	60.6	39.4
1402	Serge	.748	57.9	42.1
1434	Serge	746	53.0	47.0
1443	Thibet	.757	48.1	51.9
497	Thibet	.764	60.4	39.6
1417	Kersey	.766	66.0	34.0
1318	Beaver	.767	54.2	45.8
92	Beaver	.767	52.0	48.0
447	Kersey	.771	56.4	43.6
1470	Melton	.772	61.5	38.5
1408	Kersey	.788	62.1	37.9
1417	Worsted	.788	61.9	38.1
1467	Melton	.788	57.5	42.5
1416	Kersey	.789	60.7	39.3
906	Beaver	.794	57.3	42.7
1413	Kersey	.797	67.7	32.3
1410	Kersey	.797	57.2	42.8
1450	Thibet	793	54.3	45.7
1424	Kersey	.809	61.8	38.2
900	Beaver	.816	52.2	47.8
1791	Kersey	.829	70.1	29.9
1230	Thibet	.834	58.0	42.0
1427	Beaver	.835	51.6	48.4
118	Chinchilla	.840	61.0	39.0
1461	Beaver	.843	52.7	47.3
1489	Serge	.848	65.7	34.3
911	Dress Goods ...	.893	53.9	46.1
1490	Serge	.905	64.3	35.7
1449	Serge	.911	57.6	42.4
301	Kersey	.914	60.1	39.9
1230	Thibet	.918	61.4	38.6
1481	Melton	.923	70.2	29.8
4800	Beaver	.958	60.9	39.1
1477	Serge	.993	53.1	46.9
1442	Thibet	.993	59.4	40.6
1448	Serge	1.048	54.7	45.3
1419	Serge	1.081	65.5	34.5
53	Dress Goods ...	1.113	60.3	39.7
1240	Serge	1.114	54.2	45.8
1462	Kersey	1.118	57.0	43.0
57	Dress Goods ...	1.146	56.6	43.4
909	Flannel	1.22	58.0	42.0
902	Cassimere	1.242	60.6	39.4
1472	Thibet	1.29	59.8	40.2
5000	Piece Dye	1.36	71.2	28.8
1468	Thibet	1.43	60.4	39.6
905	Kersey	1.444	67.3	32.7
479A	Worsted	1.82	62.6	37.4

These cost figures refute the contention of the President and the Tariff Board as to the proportion of the cost of manufacturing to the total cost of low and high priced wool goods. Of these eighty-six fabrics the forty-three lowest priced cloths show an average manufacturing cost of 46.1 per cent. The forty-three highest priced show an average manufacturing cost of 40.2 per cent. The general principle to be drawn from these particulars is the opposite of that formulated by the President and the Board. There is a slight preponderance of manufacturing cost in the total cost of the low-priced goods.

THE BOARD'S RECOMMENDATIONS IN CONFLICT WITH THE BOARD'S STATISTICS

The endorsement by the President and the Board of the opposite claim is the more remarkable because it conflicts not only with mill experience, but with the cost estimates which the Board gives on pages 651 to 690. The form in which these estimates appear is misleading because the cost of the raw material and the cost of manufacturing this material into yarn are not given separately, but are both included in the single item of yarn cost. This may explain why the Board formulated a general principle which was in conflict with its own figures. On forty-two of the samples listed on pages 651 to 690 I have calculated the cost of converting the raw stock into yarn, using as far as possible the data which the Board gives. This conversion cost of yarn has been added to the Board's estimate for converting the yarn into cloth, and thus we arrive at the Board's estimate of the cost of raw material and the cost of manufacturing, which are given in percentages in the following table along with the cost per pound of cloth:

No.	Goods.	per lb.	% cost raw mat.	% mfg.
13	Woolen, cotton shoddy	$0.453	33	67
14	Woolen	.566	54	46
11	Woolen	.632	64	36
21	Woolen	.729	53	47
25	Woolen	.903	56	44
16	Woolen	.963	48	52
46	Woolen	1.008	63	37
9	Woolen, worsted..	1.012	63	37
8	Woolen	1.014	56	44
22	Worsted	1.022	59	41

14	Woolen	1.036	59	41
3	Cotton worsted ..	1.072	48	52
41	Woolen	1.074	58	42
44	Woolen	1.107	67	33
23	Worsted	1.113	58	42
1	Worsted	1.12	55	45
26	Cotton worsted ..	1.141	44	56
32	Woolen	1.147	49	51
12	Worsted	1.154	57	43
19	Worsted	1.18	54	46
33	Woolen	1.19	50	50
27	Worsted	1.228	61	39
20	Woolen	1.232	53	47
37	Worsted	1.26	62	38
10	Worsted	1.27	55	45
15	Worsted	1.277	67	33
34	Worsted	1.339	52	48
36	Worsted	1.383	71	29
49	Worsted	1.434	55	45
47	Worsted	1.502	59	41
6	Worsted	1.52	49	51
39	Worsted	1.54	59	41
48	Worsted	1.542	57	43
40	Worsted, woolen..	1.546	55	45
29	Worsted	1.614	60	40
43	Worsted, woolen..	1.682	58	42
51	Worsted	1.683	56	44
42	Worsted	1.744	59	41
7	Worsted	1.89	52	48
35	Worsted	1.96	60	40
5	Worsted	2.07	48	52
53	Worsted	2.464	50	50

These figures do not give the slightest support to the claim advanced by the President and the Tariff Board that the proportionate cost of manufacturing increases with the total cost of the goods. On the contrary the Board's own cost estimates show that the proportionate cost of manufacturing is greatest on the cheapest goods. The twenty-one lowest priced fabrics show an average manufacturing cost of 45 1/2 per cent., while the average of the remaining twenty-one highest priced cloths is 43 per cent. Thus we find that starting with a false assumption regarding the cost of manufacturing the Tariff Board recommends a system of step ladder ad valorem duties on goods, page 710:

"In general it may be said that the fabrics of high value have a relatively high conversion cost. There are, of course, individual exceptions to this general statement, but they are not of sufficient importance to materially affect the case. Consequently, if the purpose of legislation be to adjust duties so far as possible to relative labor or conversion costs, this can now best be done, so far as woolen and worsted fabrics are concerned, by assessing ad valorem rates and have them vary with the value of fabric. A system of graduated duties, increasing regularly with different increments of value, could be made equitably to equalize the difference in cost of production on the more expensive fabrics without placing prohibitory rates on fabrics of lower grades."

Mill experience and the Board's own figures stamp the premise as wrong and the recommendation as unsound. If protective ad valorem rates on wool goods are to be varied at all with the value of the fabric, the highest rates should be placed on the lowest priced goods. As a matter of fact, however, the relative proportions of raw material and manufacturing making up the cost of wool goods of different values are fairly uniform and the variations so slight that one flat ad valorem rate answers well for protective purposes.

An additional fact of interest bearing on this question of the relative proportions of material and manufacturing expense is found in the cost of the carded woolen goods made in the Hecla Mill, Uxbridge, Mass., from December 31, 1886 to October 31, 1891. The total cost of the goods was $1,343,076.47. Of this amount $795,996.02, or 59.3 per cent., was the cost of the wool, while the remainder, $547,080.45, or 40.7 per cent., covered all other expenses of manufacturing. While these Uxbridge figures have no direct bearing on the claim advanced by the President and the Board as to the variation of these proportions in the cost of low and high priced goods, they do show that the average at the Hecla Mill corresponds approximately with the results obtained at Dedham, where the average for the eighty-six fabrics was 56.8 per cent. for raw material and 43.2 per cent. for manufacturing. The item of raw material in both cases covers only the cost of the materials, wool, cotton and by-products, converted into cloth, while all other expenses, including such materials as fuel, soap and dyestuffs, are included in the cost of manufacturing.

AD VALOREM DUTIES

The report of the Tariff Board is emphatic in condemnation of ad valorem duties on wool, the objections being summarized in the following extracts:

Page 4. "These discriminations could be overcome by assessing a duty in ad valorem terms, but this method is open to the objection, first, that it increases administrative difficulties and tends to decrease revenue through undervaluation; and, second, that as prices advance, the ad valorem rate increases the duty per pound at the time when the consumer most needs relief and the producer can best stand competition; while if prices decline the duty is decreased at the time when the consumer is least burdened by the price and the producer most needs protection."

Page 11. "The Board finds that an ad valorem rate is open to grave objection from the point of view of administration and revenue, in the case of a crude, bulky commodity like wool, produced in many remote regions and finding its way into the markets through so many various channels of trade.

"That furthermore an ad valorem rate would give a high duty per pound when prices were high; that is, when the consumer most needs relief and the producer is most able to bear competition. With a low price of wool the duty per pound would be low; that is, at the time when the consumer has less need of competing wools and the producer is least able to bear competition."

If these two objections to ad valorem duties are sound in respect to wool they have even greater force when a tariff on manufactured goods is considered. The value of raw wool is easily determined, whereas the appraisal of manufactured goods is difficult. Moreover if the evil effects of fluctuating prices, over which the President and the Tariff Board express so much concern in the case of wool, are not imaginary, they will certainly be far more serious in the case of manufactured goods, because the protective duty on goods involves not only the protection of the wool grower, but of the wool manufacturer as well. And yet the President and the Board unite in recommending an ad valorem duty for goods, where all of their objections, if valid, have the greatest force. If they are right in recommending an ad valorem duty for goods, they are wrong in condemning it for raw wool. No part of this contradictory report and the message accompanying it excites more surprise than the condemnation of ad valorem duties for raw material and the approval of such duties for manufactured goods.

THE BURDEN OF SPECIFIC RATES

Equally surprising is the manner in which the report and the message ignore the serious objections to a specific duty on a material varying in value as widely as scoured wool. In the preceding pages of this analysis are illustrations of these variations. A typical example is supplied by the 30,644 bales of scoured wool sold at London last July, which showed ad valorem equivalents of a 20-cent rate per scoured pound varying from 33 per cent. on the highest priced lot to 333 per cent. on the lowest priced. The President and the Board unite in recommending a wool duty subject to such burdensome inequalities, at the same time condemning a uniform ad valorem rate because of the possibility of undervaluations which could not exceed 5 per cent. without gross official negligence. Suppose that under an ad valorem tariff two vessels laden with wool should reach an American port, each carrying 3000 bales, 900,000 pounds scoured weight, of wool; that the wool in one vessel was valued at $216,000, and in the other at $432,000. A fair method of taxing this wool would make the tax on the low-priced cargo one-half of that imposed on the other which is worth twice as much. It would unquestionably be a great injustive to collect the same tax, say, $108,000, on each cargo. That would be like taxing real estate at so much per parcel, instead of so much per thousand dollars of valuation. It would increase the cost of one cargo by 50 per cent., and the cost of the other by only 25 per cent. It would be injustice, discrimination and special privilege. And yet it is exactly that objectionable system which the President and the Tariff Board recommend for the duty on wool. And one of the reasons for their recommendation is the possibility, under a straight ad valorem tariff, of a variation due to undervaluation that could not exceed 5 per cent. if the administrative officers did their duty.

Another serious objection to specific duties which the President and the Board ignore when advising a specific duty on wool, is the heavy burden it places on low-priced materials suited for consumers of low purchasing power, while the high-priced goods that go to consumers of high are apparently indifferent in their zeal for a specific purchasing power escape with a light duty. This analysis is filled with illustrations of this particular evil, to which the President and the Tariff Board cific tariff based on the scoured weight of wool. The objection to an ad valorem duty because of the fluctuation of market values deserves little consideration. Price fluctuations comparable to the fluctuations of the ad valorem equivalents, which we have seen to be certain under specific duties, are unthinkable. The ordinary fluctuations of prices offer no serious difficulties to either producer or consumer in connection with an ad valorem tariff. Prices do change, like all other things, and with an ad valorem tariff the duty collected will change in harmony with them. And it is only by an ad valorem tariff that the injustice of collecting a fixed tax regardless of value, as under the present tariff on wool, can be avoided. Moreover if a protective tariff is to be adjusted to the difference in the cost of production between this country and abroad, the value is the only proper basis for the rates.

ADVANTAGES OF AD VALOREM RATES

I have already shown the practical uniformity of the proportions of material and manufacturing costs that make up the total cost of different fabrics, and which show how well an ad valorem basis is suited for a tariff based on the manufacturing cost. Moreover, the cost of partly manufactured products increases with each process. The value increases with each step in manufacturing, thus automatically apportioning and adjusting the basis of the tariff to the protective requirements. For example, if wool is converted into worsted cloth the total value of the wool is divided, part of it being represented by the value of the by-products at the successive stages of manufacturing, and the remainder being combined with the manufacturing cost to make up the total cost of the cloth. Eliminating profits, the market value of the cloth and by-products thus provides the basis for the proper protective tariff rates. And the practical uniformity of the proportions of raw material and manufacturing in the cost of cloths makes the value the best basis for the compensatory duty.

There is another important point in this connection. Let us assume that there is an ad valorem duty of 40 per cent. on wool, and that the American cost of manufacturing is twice the foreign cost. As the proportions of raw material in different fabrics are, with few exceptions, found to vary between 50 and 65 per cent., we will take for illustration two cloths of which one represents a foreign cost per yard made up of 50 cents for wool and 50 cents for manufacturing, while the cost of the other per yard consists of 65 cents for wool and 35 cents for manufacturing. To equalize the foreign and domestic costs of these two fabrics the following duties would be necessary:

NO. 1 CLOTH

Foreign Cost		Difference	Amer. Cost
Wool	$0.50	$0.20	$0.70
Mfg.	.50	.50	1.00
	1.00	.70	1.70

NO. 2 CLOTH

Wool	$0.65	$0.26	$0.91
Mfg.	.35	.35	.70
	1.00	.61	1.61

This shows that while the difference in the cost of manufacturing varies 15 cents a yard, the difference in the total cost duty paid varies only 9 cents per yard. For that reason a flat ad valorem rate of 70 per cent. on goods would in extreme cases exceed the required protection by only 5 per cent. This is a negligible difference when compared with the extreme variations under a specific tariff, which have been such powerful factors in arousing public sentiment against not only the Payne bill, but the policy of protection itself.

A TARIFF BILL "IN ACCORDANCE WITH THE REPORT"

I have endeavored to confine the foregoing analysis to the more important features of the Tariff Board's report on schedule K. This has resulted in the omission of reference to a number of points which, though deserving attention, are of comparatively minor importance. The Hill bill (H. R. 22262) for revising schedule K has recently been introduced into the House of Representatives, and as its author, Mr. Hill, announced that it was in accordance with the report of the Tariff Board, a brief examination of this measure may not be out of place here, affording, as it will, an opportunity to illustrate the practical application of various recommendations in the report.

THE HILL TARIFF ON WOOL

The Hill bill provides for a specific duty of 18 cents a pound on the scoured weight of grease wool. The difference between this rate and the rate (20 cents a pound) which is used in this analysis to illustrate the operation of a scoured weight duty on wool, is so slight that my previous comments on this feature of the Board's report can be applied to the wool duties on the Hill bill. Take, for example, the 30,644 bales of scoured wool sold at London last year. The 20-cent rate made the highest ad valorem equivalent 333 per cent.; the lowest, 33 per cent., and the average 67 per cent. The Hill rate of 18 cents would make the highest ad valorem equivalent 300 per cent.; the lowest 29 per cent., and the average 60 1/2 per cent. The proportionate variation is the same in both cases; the reduction would be of negligible value to either manufacturer or consumer. The Payne rate on scoured wool is 33 cents a pound, giving on the scoured wool above named extremes of 550 and 54 per cent., the three rates showing the following comparison:

	Hill 18 cts.	20 cts.	Payne 33 cts.
High	300%	333%	550%
Low	29½	33	54
Average	60½	67	111

BY-PRODUCTS

The Hill rates on wool by-products are as follows:

"Top waste and slubbing waste, 18 cents per pound; roving waste and ring waste, 14 cents per pound; noils, carbonized, 14 cents per pound; noils, not carbonized, 11 cents per pound; garnetted waste, 11 cents per pound; thread waste, yarn waste, and wool wastes not specified, 9 1/2 cents per pound; shoddy, mungo, and wool extract, 8 cents per pound; woolen rags and flocks, 2 cents per pound."

All that has so far been said regarding the inequalities and burdens resulting from specific duties on wool and wool goods, applies with special force to such duties on wool by-products, the use of which is essential to the proper clothing of people living in temperate and cold climates. The operation of the Hill duties on by-products is illustrated by applying them to the forty-two samples of noils, waste and shoddy to which reference was made in Senate Document No. 38, 61st Congress, First Session. This illustration is conservative because by-products will be found in the market both higher and lower in price than any on this list:

No.	Name	Price cts. lb	Ad val. equiv. Hill	Payne
4	Black shoddy	6½	123%	385%
6	Cheviot shoddy	6½	123	385
22	Carbonized serge ...	7	136	286
1	Green wstd. shoddy..	8	100	312
2	Dyed black mungo ..	8½	94	118
3	Dyed green mungo ..	8½	94	118
23	Carb. black wstd. ...	9	122	333
5	Med. wstd. shoddy ..	9	89	222
21	Blk. wstd. carded ...	10½	90	190
2640	Crossbred noils	12½	88	160
16	Colored waste	13	73	154
2541	Crossbred noils	14	79	143
2880	Olive shoddy	15	53	167
11	English noils	15	73	133
2537	Crossbred noils	15	73	133
18	Grey waste carded..	15	63	133
2469	Fine shoddy	16	50	157
10	English noils	16	69	125
9	English noils	16½	67	121
2534	Crossbred noils	16½	67	121
2536	N. Z. noils	17	65	117
2535	Crossbred noils	17½	62	114
20	Colored crossbred ..	19	57	157
2539	50s noils	19½	56	102
2533	Lister noils	20	55	100
8	English noils	20	55	100
15	Hosiery waste	20½	46	97
2532	Lister noils	20½	53	97
17	White waste	20½	53	146
13	White hos. waste ...	21	45	95
12	Down noils	21½	51	93
2990	Light shoddy	22	36	114
3155	Light waste	22	43	91
2785	Black shoddy	22	36	114
14	Hosiery waste	23	41	87
26	Crossbred noils	23½	47	85
7	White noils	29	38	69
27	Botany noils	31½	35	63
28	Cape noils	33	33	61
19	Botany waste	35	31	86
25	Aust. 80s noils	35	31	57
21	Colored botany	39	28	77

The Hill rates appear moderate compared with the Payne duties, but for nearly all the materials in the list the former would have the same effect as the latter—exclusion.

WORSTED TOPS

In order to show how the Hill rates on worsted tops would operate I have calculated the ad valorem equivalents of both the Hill and Payne rates for eight grades of tops ranging from the highest to the lowest sold at Bradford, England, the prices being for March 15, 1912. The results follow:

Name	Price cts. per lb.	Ad val. equiv. Hill	Payne
40s Colonial	26½	80%	168%
44s Colonial	28	76	161
50s Colonial	34	64	138
56s Colonial	39	56	124
60s Colonial	48½	46	105
70s Colonial	52	43	100
80s Colonial	54	42	97
90s Colonial	60	38	91

Here again we see the irregularity of ad valorem equivalents and the heaviest burden on the lowest priced materials that always result from specific duties. The Payne rates on worsted tops are all prohibitory. The Hill rates would be prohibitory on low-priced tops and under certain conditions of domestic supply and demand would probably permit of a limited importation of high-priced tops. The Hill duty on tops is made up of a specific duty of 20 cents, called the compensatory duty, and a protective duty of 5 per cent. ad valorem. This division is only nominal. On low and medium-priced tops the specific duty would fail to compensate for the exclusion of the low-priced wools of which such tops are made.

YARN

Under the Hill bill yarns would be subject to a duty of 21 1/2 cents per pound and an additional ad valorem rate graded according to value as follows:

30 cents and under	10% ad val.
30 to 50 cents	15% ad val.
50 to 80 cents	20% ad val.
Above 80 cents	25% ad val.

The Tariff Board's recommendation that the protective duty on goods be ad valorem and increase with the value of the goods in order to protect the supposed greater proportionate cost of manufacturing high-priced goods, has been adopted in framing the Hill tariff on yarn. I have shown that that assumption is incorrect. The progressive increase in the Hill protective rates is, consequently, unwarranted. The specific rate of 21 1/2 cents per pound, giving the highest ad valorem equivalent on the lowest priced yarns, serves in some measure to correct the inequalities resulting from the progressive increase of the ad valorem rate. This correction is only partial, however, as is shown by the Hill ad valorem equivalents on thirteen grades of worsted yarn quoted at Bradford, England, on March 15, 1912:

Name	Price per lb.	Ad val. equiv. Hill	Payne
2/16s crossbred (32s)	32	82%	160%
2/15s 3-ply carpet	34	78	153
2/32s crossbred (40s)	37	73	145
2/36s (44s)	40	69	136
2/40s (46s)	44	64	128
2/20s (50s)	48	60	120
2/20s (56s)	54	60	111
2/48s (58s)	65	53	99
1/60s Botany super (64s)	72	50	93
2/60s crossbred (70s)	77	48	90
2/48s twist (64s)	82	51	87
2/40s medium mohair	84	50	86
1/30s super mohair	1.16	43	73

The irregularity of rates and preponderance of duty on low-priced materials, with which we have become familiar, are illustrated again by the application of the Hill and Payne rates on these worsted yarns. The list fails to show the full extent of the irregularity, however, because it does not include the low-priced carded woolen yarns made of mixtures of wool and by-products.

TARIFF ON CLOTHS

The Hill bill imposes a compound duty on cloths, knit goods and felts. The specific rate is 25 cents per pound on goods valued at not more than 40 cents per pound, and 26 cents on goods valued at more than 40 cents. The ad valorem rates are graduated according to value as follows:

Not over 40 cents	30% ad val.
40 to 60 cents	35% ad val.
60 to 80 cents	40% ad val.
80 cents to $1.00	45% ad val.
$1.00 to $1.50	50% ad val.
Over $1.50	55% ad val.

These rates, so far as they apply to felts and knit goods, are not in accordance with the report of the Tariff Board, for the Board made no report on these goods. The limitation of the specific rates to the wool contained in the goods is, in the case of cloths as well as yarn, in disregard of the opinions of the Tariff Board, page 626:

> "Goods made with a cotton warp and wool weft may be easily recognized and rated; but it frequently happens that both warp and weft contain more or less of cheaper materials. There are, of course, well known and simple tests for discovering the cotton content of a fabric, but their application to imported cloths in the custom house would involve considerable difficulties. Moreover, there is no test known that will disclose the proportion of noils, shoddy, mungo, etc., to new wool in many varieties of fabrics. Difficulties of this kind, however, could be partly overcome by graduating the compensatory duty according to the value of the fabric."

The Hill bill evidently contemplated confining the specific duty to the wool fiber in a fabric, regardless of whether the fiber was new wool, wool by-products, or reclaimed wool. The 25-cent rate on goods valued at not more than 40 cents per pound is but a pretense of accepting the graduated compensatory duty recommended by the Board,

because the reduction of one cent a pound from the regular rate is negligible, so far as the professed object is concerned.

The sliding scale of ad valorem duties is in accordance with the recommendation of the Tariff Board. We have seen that this recommendation is based on a false assumption regarding the proportionate cost of manufacturing goods of different values. If 55 per cent. ad valorem is required for protection on goods valued at more than one dollar and fifty cents per pound, that rate is necessary on goods valued at less than one dollar and fifty cents per pound.

In order to illustrate the operation of the Hill rates on different grades of cloths and to afford a comparison with the Payne rates, I have calculated the ad valorem equivalent of the Hill and Payne rates for thirty-four fabrics, seventeen of which are taken from the report, pages 660, 704, and 705:

Name	Value per lb.	% Wool	Ad val. equiv. Hill	Payne
No. 14	$0.35	....	101%	144%
E 382	.428	80	83	153
E 24	.47	....	90	143
A 207	.516	67	69	135
A 220	.571	14	41	127
E 15	.566	....	81	145
A 96	.597	46	55	124
A 560	.638	47	59	113
A 561	.656	50	60	111
A 562	.663	52½	61	110
A 563	.84	51	61	102
A 25	.88	....	75	106
608	.80	....	73	110
C 96	.955	....	72	101
E 119	.993	....	71	99
566	1.015	68	67	98
A 211	1.05	....	75	97
D E	1.07	....	74	96
A 412	1.214	61	63	91
E 55	1.28	61	62	91
D	1.295	....	70	88
E	1.404	....	69	87
F	1.419	....	68	86
M	1.444	....	68	85
B	1.448	....	68	85
N	1.496	....	67	84
G	1.557	....	72	83
A	1.587	....	71	82
K	1.587	....	71	82
I	1.611	....	71	82
J	1.685	....	70	81
H	1.823	....	69	79
C	1.896	....	69	78
L	1.99	....	68	78

The limitation of the Hill specific duty to the wool content of the cloth has resulted in a marked decrease of the ad valorem equivalents on the eleven fabrics containing cotton. The list, however, exhibits the same general features that were evident in the case of partly manufactured goods, namely, wide variations and the highest rates on goods of the lowest price, these being the results of the flat specific rate. These thirty-four fabrics do not include samples of that important class of low-priced goods made of mixtures of wool and wool by-products. On such goods the full Hill specific rate would apply and, by reason of the low valuation and excess of the compensatory duty, ad valorem equivalents higher than any shown in the above list would be the result. The Hill tariff on blankets is based on a system of compound duties similar to those on cloths, so the criticism of the latter applies equally well to the former.

CARPET WOOL

The Hill bill provides for a specific duty of 7 cents a pound on carpet wool imported in the grease, and 19 cents if imported scoured. We have already applied this rate (7 cents) to the carpet wools grown throughout the world and that application will illustrate the effect of the Hill rate on carpet wool. These wools are light shrinking so the effect of the Hill rate on carpet wool of 19 cents a pound scoured would be to prohibit the importation of such wool in the scoured condition. The bill also provides that 99 per cent. of the duty on carpet wool shall be refunded to the producer who uses such wools in the manufacture of carpets, rugs and similar goods, the intention being to give the carpet manufacturers free wool. The bill provides that:

> "Such drawback shall be paid under such rules and regulations as the Secretary of the Treasury may prescribe."

This drawback provision would certainly be impossible of administration. It is impossible for any manufacturer to trace the wool through the mill and give proof that it has been converted into certain goods. Moreover there are mills making carpet yarn for sale. How could the wool in such yarn be traced from spinner to dealer, from dealer to dealer, and from dealer or spinner to the weaver, and then through the weaving mill where it becomes inextricably mixed with other materials, wool, linen, hemp, jute, cotton? Again there are spinners making yarn from both carpet and other wools, which would add a new element of uncertainty to a task already impossible. Part of a lot of yarn may be converted into carpets and rugs and the remainder be held indefinitely in the form of yarn. And the by-products, how are these to be traced to their final destination in a carpet or into cloth for other purposes? This drawback plan to give the carpet manufacturer free wool does not deserve serious consideration.

CARPETS AND RUGS

The Hill bill provides for rugs an ad valorem duty of 50 per cent.; for carpets, 30 per cent. These rates are in disregard of the recommendation of the President and the Tariff Board that ad valorem rates, increasing as the value increases, should be adopted in order to provide adequate protection for the supposed higher proportionate cost of manufacturing high-priced goods. And these straight ad valorem rates, according to the evidence I have submitted, are the best form of a tariff on wool goods, whether the object is to provide compensation for a duty on the raw material, or protection against a lower cost of manufacturing abroad.

In order to compare the Hill and Payne rates I

have calculated the ad valorem equivalents on five grades of English carpets, with the results following:

Grade	Price per yd. 27 in. wide	Ad val. equiv. Hill	Payne
A 417 Tapestry Brussels	$0.30	30%	110%
A 416 Tapestry Brussels	.50	30	82
A 415 Stout Brussels	.60	30	95
A 414 Best Brussels	.90	30	77
A 413 Super Wilton	1.40	30	72

The irregularity of the Payne rates, with the highest duty on the lowest priced goods are features of the Payne equivalents, the effect of the specific duties per square yard, whereas the Hill rates are uniform, bearing equally on all grades in proportion to their respective values.

In conclusion I desire to express my keen regret at having found the statements of fact in the report deficient and the conclusions generally erroneous. The Tariff Board's work on schedule K may, nevertheless, serve a useful purpose by awakening interest in a question of great importance, provided the real character of the investigation is clearly understood.

Boston, Mass.
April 27, 1912.

A KNITTED FABRIC FOR TURKISH TOWELING

The knitted fabric shown in the illustrations and recently patented in this country, is intended as a substitute for woven Turkish toweling. Fig. 1 shows the laps laid flat on the fabric. Fig. 2 is a horizontal section showing the manner in which the thread is passed back and forth through the meshes of the knitted web. In making this fabric the filling thread is woven back and forth through the meshes of the knitted fabric forming loops on both sides of the cloth. The filling yarn is interwoven with the knitted web during the knitting operation, either by hand or machine.

The stitches, 1, appear in vertical rows, the stitches in one row being connected with stitches in another row by floating threads, 2 and 2^a, forming vertical rows of meshes alternating with the vertical rows of stitch loops

A number of filling threads, 3 and 4, appear in prominently projecting loops upon both sides of the fabric. The filling-thread, 3, thus appears in loops, 3^a, upon one side of the fabric and in loops, 3^b, upon the opposite side of the fabric, while the filling thread, 4, appears in loops, 4^a, upon one side of the fabric and in loops, 4^b, upon the opposite side of the fabric. These filling threads are woven back and forth through the meshes between the vertical rows of stitch loops, the loops of each filling thread on each side of the fabric embracing the respective stitch-loops, 1, of the knitted web, while the loops of the filling thread on the opposite side of the fabric embrace floating threads, 2 or 2^a.

Two filling threads are employed, and the loops of filling thread on one side of the

FIG 1.

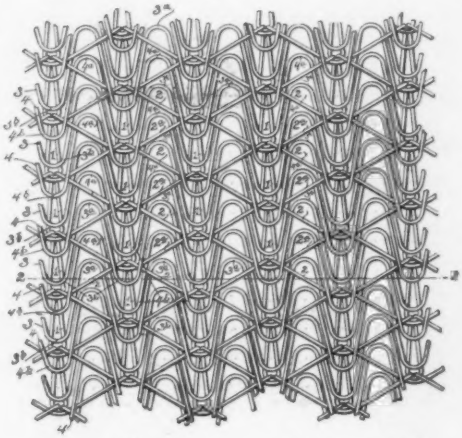


FIG. 2.

fabric embrace the stitch loops of the knitted web, while the loops of one of the filling threads on the opposite side of the fabric embrace the alternate floating threads between neighboring vertical rows of stitch loops, and the loops of the other filling thread on the opposite side of the fabric embrace the remaining floating threads. Thus each stitch loop, 1, is embraced by a loop, 3^b, and a loop, 4^b, of the filling threads, 3 and 4, and the alternate floating threads, 2^a, are embraced by the loops, 3^a, of the filling thread, 3, and the remaining floating threads, 2, are embraced by the loops, 4^a, of the filling thread, 4. Both sides of the fabric are covered by the projecting loops of the filling thread, giving to the fabric a heavy body and absorbent qualities adapting it for many uses, and particularly for toweling.

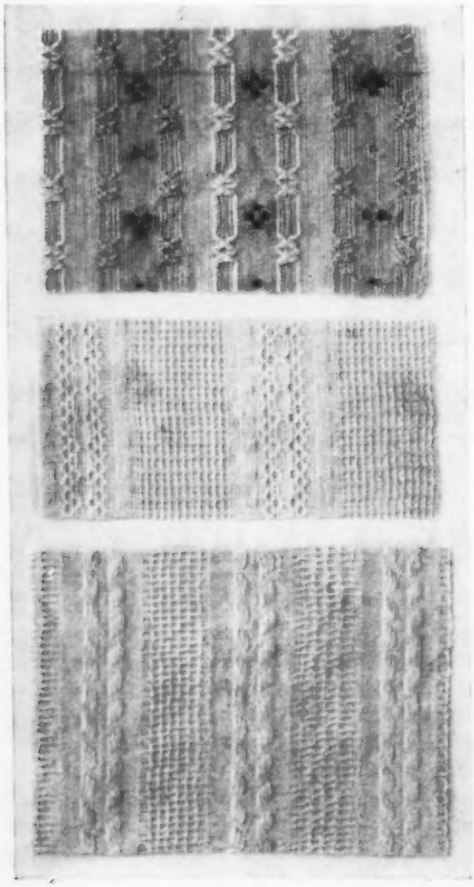
Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

FANCY LENO EFFECTS

BY GLAMORGAN

The following particulars as to the samples of leno fabrics herein illustrated, should be useful to those engaged in this class of



FIGS. 1, 3 AND 5.

work, embracing as they do some of the most popular leno styles for dress goods, some of the examples being exceptionally rich in suggestions for other designs in similar makes of cloth.

Fig. 1 is a one doup leno ornamented by an extra weft spot effect in black filling. The ground is in ecru warp and filling, and provides a neat basis for the leno cords and the black spots. This design as shown in Fig. 2 would require one doup and six healds for its reproduction. It is woven in a reed with 36 dents per inch, ground warp 36s and the net cords 2/36s mercerized, with 68 picks

FIG 7.

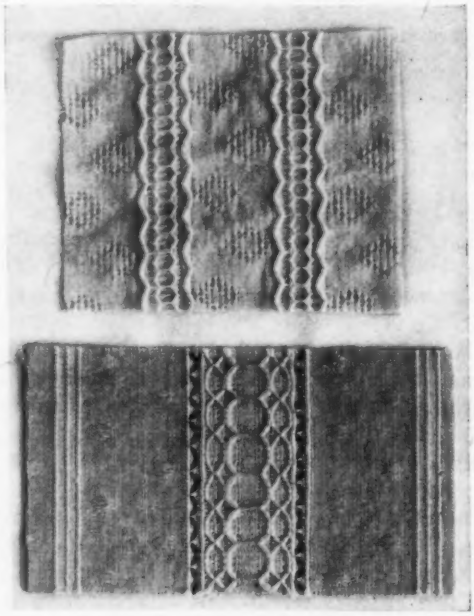


FIG. 9.

per inch of 80s ground filling, while the black filling is 12s.

Fig. 3 shows an open ground cloth woven by three doups, and having a simple extra warp stitch in mercerized yarns introduced. This cloth as shown by the design in Fig. 4 is of a simple character, but is very effective and is a good seller. The yarns are as follows: Ground warp 36s, mercerized warp 2/40s, net warp 2/20s, filling yarn 36s. The

cloth woven in a reed with 36 dents per inch, and with 42 picks per inch.

Fig. 5 shows an interesting style in which the open work stripe runs across the piece from selvage to selvage. The threads are drawn two crossing two throughout the piece, but extra healds are necessary to allow the extra filling cross over effect to be made. In addition to the cross over effect narrow stripes across the piece of mercerized filling are also introduced. It will be noticed that the leno effect is varied in alternate stripes, this being clearly shown at A and B, Fig. 6. Although some very pretty and effective designs are easily obtained, this principle of striping is but seldom adopted, owing to the difficulty of making up cross striped fabrics.

FIG. 4.

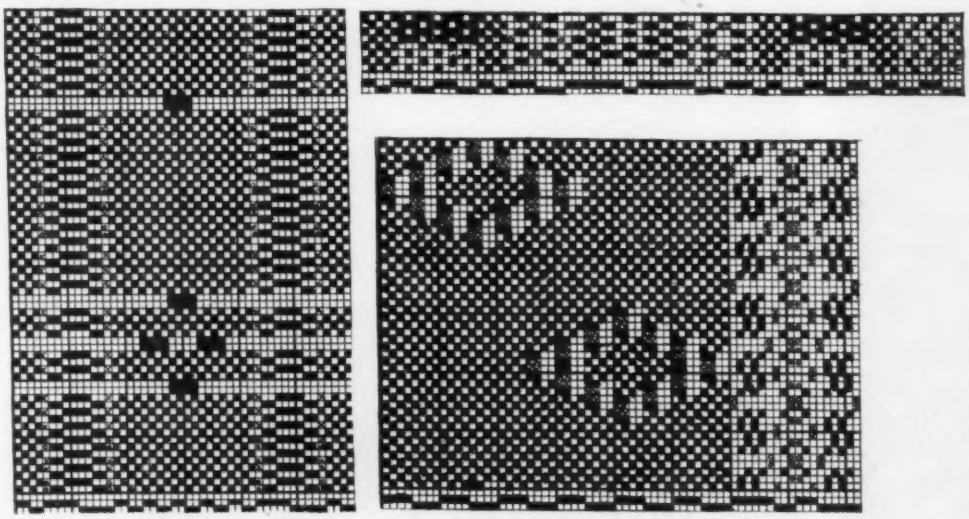


FIG. 2.

FIG. 8.

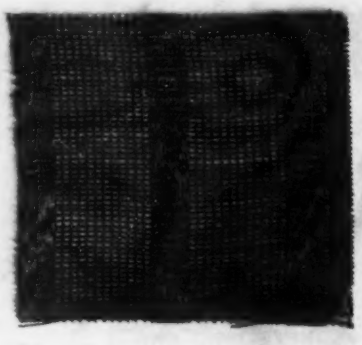


FIG. 11.

Fig. 7 is a bleached sample in which the principal feature is a net stripe of a very open character, the outer lines being made by a thick cord, crossing 8 fine threads working in pairs, while the inner lines are made by a thinner cord crossing 4 single threads which work as one. Small diamond shaped figures of 2 and 2 leno show up well on a calico ground, and help very materially to make a pleasing combination. Fig. 8 shows the design on point paper, the denting and yarns being as follows:

Dents	Ends	
12	48	leno 8os
1	1	net 12/40s
	8	standard 8os
1	0	
1	1	net 3/36s
	4	standard 8os
2	0	
1	4	standard 8os
	1	net 3/36s
1	0	
1	8	standard 8os
	1	net 12/40s
20	76	

The cloth is woven in a reed with 23 dents per inch, and 76 picks of 80s filling per inch. Fig. 9 shows a style in which luster filling is used to bring up small spots on a pale green ground. The net leno effect is developed on a pink ground, and is outlined by a black zigzag line between two white cords. The two center net threads combine with the luster weft to give bold octagonal shapes down the center of the fancy stripe; a feature which is often introduced in cloths of this character, and which lends itself very readily to much variation.

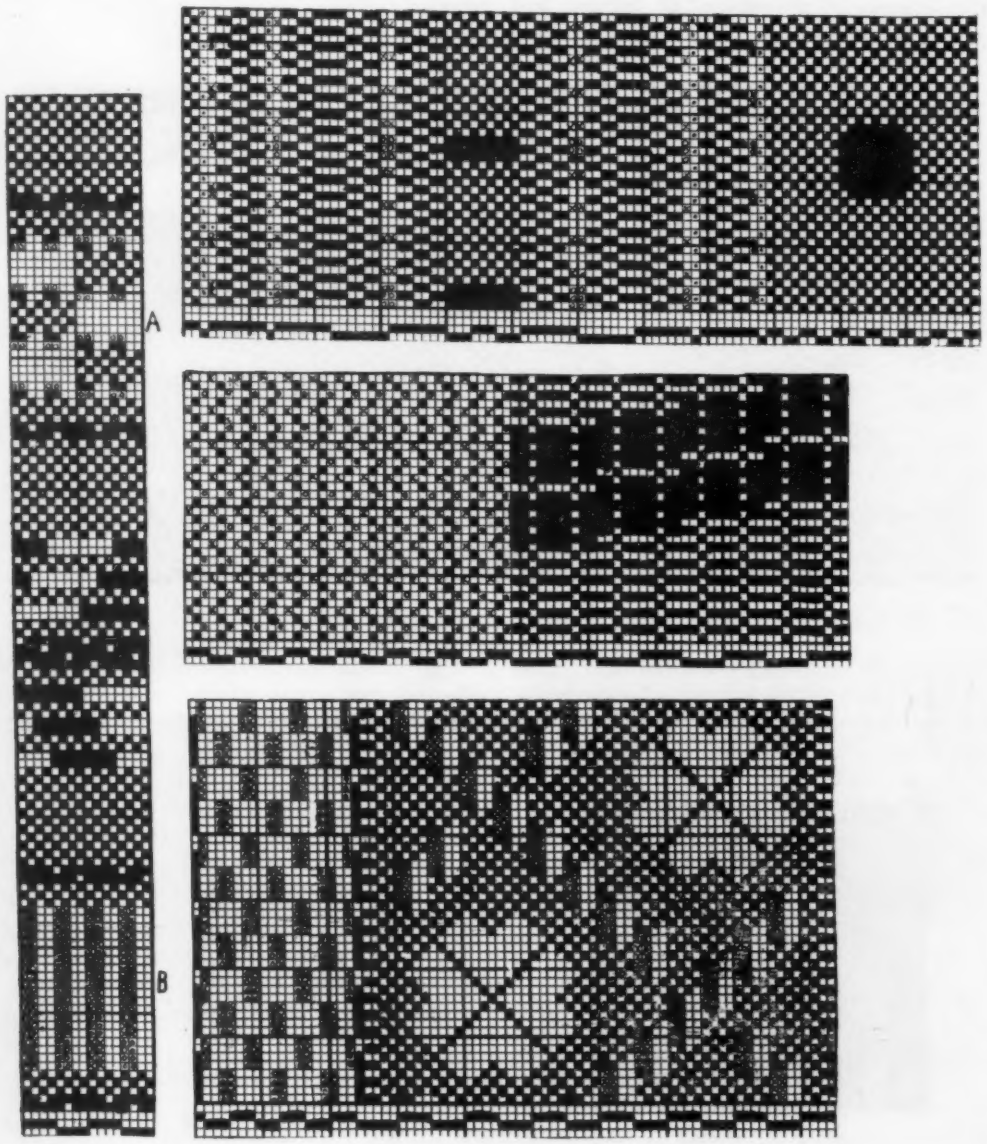


FIG. 6. FIGS. 10, 12 AND 16.

Fig. 10 shows the greater portion of the

design on point paper. The reed has 42 dents per inch, while the yarns are as follows: Ground warp 50s, black net 2/32s, white net 2/24s, white cord 4/32s, filling 36s luster yarn, 84 picks per inch.

Fig. 11 is a neat grenadine dress cloth woven with one doup and eight figuring shafts for the luster strips, the design being shown at Fig. 12. Cloths of this character are a standard requirement, a common make being as follows: Reed 25 dents per inch, ground warp 50s, figuring warp 2/40s mercerized; woven with 42 picks per inch of 54s filling.

FIG. 13.

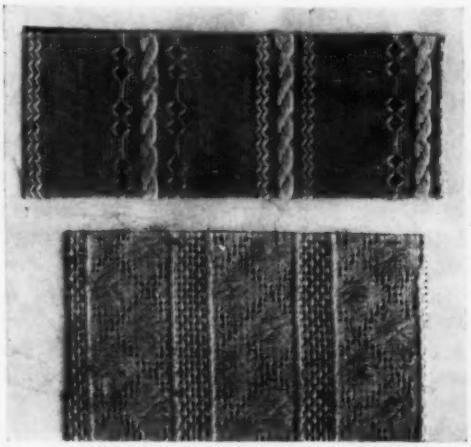


FIG 15.

Fig. 13 illustrates a cloth in which a bold corkscrew line is introduced between each leno line. The effect is obtained by using coarse yarns twilled up, but crammed in the reed. The leno effects are varied for alternate stripes and require two doups. Ecru yarns are used for the ground, while the net and the coarse yarns are white. This latter is eight fold 40s slightly twined. Four of these threads crammed into two dents are used in each stripe, as indicated by the design, Fig. 14; the net ends being 2/16s. The reed has 36 dents per inch, and there are 68 picks of 36s filling per inch.

Fig. 15 is a neat combination, in which a figured leno effect relieved by small weft figures, forms the principal feature of the design. A simple leno effect in which 4 picks are placed in each shed, is outlined by a strong cord, and thus gives a pleasing contrast with the wider brocade strips. The design is shown in Fig. 16 and a suitable make would be: Reed 24 dents per inch, ground warp 50s cord yarn 6/36s, 92 picks per inch of 80s filling.

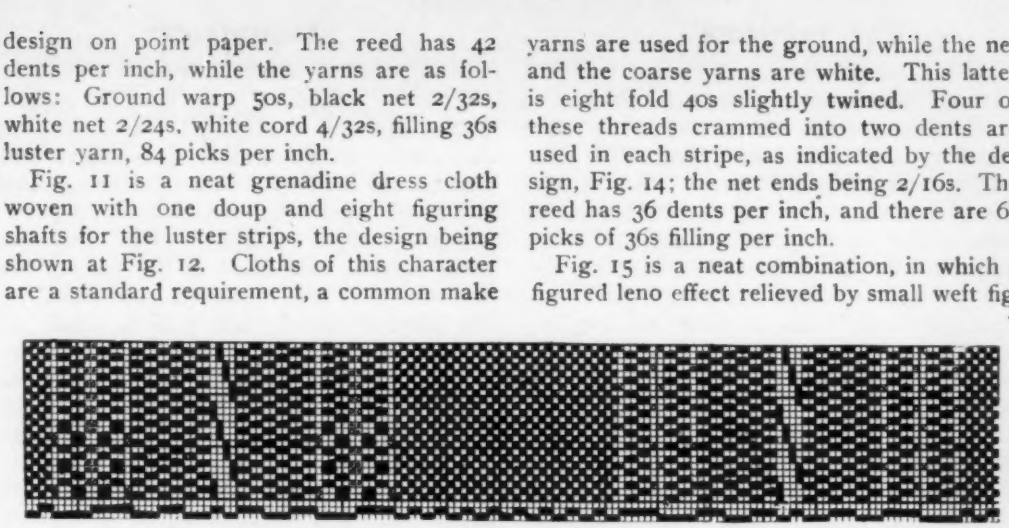


FIG. 14.

Two methods of showing the net ends on the designs are illustrated in designs 2, 6 and 10. One vertical space is used for the net ends; while in designs 4, 8, 12, 14 and 16, two spaces are used, one space to represent the crossed side of standard ends, and the other space to represent the straight side or open shed. In all cases a cross represents a net end lifted for the cross shed, while a circle represents a net end lifted for the open shed. In the leno brocade portions of designs 8 and 16, a cross shows a leno end lifted for cross shed, while the ordinary filled in square is used to denote its open shed.

The latest available statistics estimate that the world's sheep stocks have only increased from 522,584,083 in 1895 to 582,722,789, or 11 per cent., while the world's wool-using population increased in the same period from 520,336,225 to 635,457,578, or 22 per cent.

TEXTILOSE

Editor Textile World Record:

Your June issue contained a reference to a German process of manufacturing yarn from waste products and paper. This process of converting low cotton waste in conjunction with paper into yarn is simplicity itself and has a large field, especially in this country. By this process low card sweeps, flat and clearer waste, blowings and even unspinable "fudd" can be used without any great loss of low fly, etc., which are attendant on present processes. The machinery to handle this line is made in Germany and is as heavy if not heavier than flax and jute machinery. The card has a seven-foot cylinder and is from four to six feet wide, with the workers and strippers distributed as usual, but of correspondingly heavy make. The stock is fed on an apron in the ordinary way, and the web is combed from the single doffer and allowed to fall on a paper sheeting which has passed over a size or glue roller. It is gummed on one side and the web adheres to this.

The paper is pulled from a beam or roll and travels at the same surface speed as the doffer through a pair of drying calenders and on the finished roll. The finished roll then consists of a paper base and cotton fly, and is from 1/8 to 1/2 inch thick, depending on the speed of the doffer and weight of the feed. The sheet is now put into the cutting machine and cut into strips of the width desired. The tape is usually from 1/4 inch to 1 inch in width and is then rolled on a jack spool. This is taken to the spinning frame where the correct amount of twist is put in. The ribbon is passed through a trough of water or gum size to lay the yarn and the twist is prevented from running up to the spool by passing the tape under an endless leather apron which holds it flat to the front roller. The twisting flyers are inverted and owing to the many colors of the paper that can be used, quite a variety of twine of excellent appearance and strength is the result. It is compact and round and, considering the poorness of its fibrous make up, is a remarkable production. Darius.

ENGLISH NOTES

By Our Regular Correspondent

Bradford, Eng., June 18, 1912.

The efforts of the British Cotton-growing Association have been so rich in unfavorable results that the hopes for the future are now narrowed down to three main fields, Nigeria, Uganda and the Soudan. India does not come into the calculation as it is outside the Association's care. Nigeria, according to the late Sir Alfred Jones was to supply all the cotton Lancashire could use, but the present output is 2,500 bales and an eventual 10,000 is all that is responsibly anticipated in the near future. Uganda is producing 19,000 bales now and is expected to yield 50,000 two years hence. The Soudan produces 20,000 bales and offers prospects of a large production of staple of the American type. Given great enough outlay there are hopes of raising 250,000 bales a year in ten years' time. Money is wanted and the multi-millionaire who was to have financed the project is dead. The British Government is being called in to undertake a venture that will require sixty million dollars before it is finished. The immediate demand is more moderate and is for one million grant-in-aid and five million dollars upon loan. If the Government finds the money for railways and irrigation the Ecksteins are apparently prepared to find capital for commercial development. The Government would have to put up two dollars to the financier's one and to bear the expense of the initial research and experiment.

India's cotton growing schemes are between the Indian Government and the Bombay millowners. The latter have been anxious to keep Lancashire out of the Indian cotton field and to prevent the marketing of the crop in Europe. Commercially the British Cotton-growing Association is still a losing concern and its deficiency of $125,000 on the year's working is very nearly equivalent to a loss of five dollars on each bale handled during the year. There is a deficit of $800,000 on capital account. Consolation is sought in reflecting that the Association has at least swelled the cotton supply by a total

220,000 bales in nine years and that it has set in motion a movement which cannot stop. The results for 1911 scarcely justify the bright optimism of 1902.

* * *

The Textile Institute seems to have encountered more complications than were expected in course of its effort to lay down a standard definition of "indigo blue." The aim has been to state the percentage of indigo which ought to be used in dyeing goods sold under this name and to detail the tests by which the quality of the dye should be judged. The chemists concerned do not find the specification of the tests easy and it is hard to see how any pronouncement will prevent those who wish from labeling "indigo" any goods containing any proportion of that coloring matter. The improvement of other dyestuffs has robbed the word of its old preeminence and the inquiry comes too late to be of great use either to manufacturers or the public. Worsted and woolen manufacturers prefer a good alizarin to any indigo even on their finest goods. A blue that stands a year's exposure to all weathers satisfies everybody and it is general experience that consumers do not like any blue which rubs loose and discolors linen as good indigo does. Except for government orders for dyed woolens and the large trade in indigo cotton prints little would be used in this country and the large users employ hardly anything but synthetic indigotin.

* * *

There is no immigrant labor in English mills, but there are at least two distinct classes of operatives. The best help the manufacturer ever finds is that which he trains for himself and draws from the decent working class of his own immediate neighborhood. In ordinary circumstances of payment and treatment these people stay with him and form almost a part of the mill. Let them leave in anything like large numbers and a perceptibly lower type of worker has to be recruited in their place. The employer gets the shiftless and unreliable element discharged from other mills. Discontents increase, the quality of the work suffers and a long and painful time is spent in getting together a body of help that is nearly as efficient as the original band. One speaks, of course, of times when trade is good and of those manufacturers who are shortsighted enough to let a small matter of wages drive their operatives elsewhere. Once the exodus starts every new measure makes affairs worse. The remnant of the old hands leave either because they do not like the newcomers or because they object to doing all the difficult work while younger ones are learning the simple tasks. Men who have seen the process before shake their heads significantly over a trouble that is easy enough to prevent, but extraordinarily difficult to overcome. As for the employer—he learns what his workpeople were worth when he loses them.

* * *

Considerable extensions of the piece-work system have been made in the dyeing and finishing works in the last few years and difficulties have been met in rate-fixing. It is necessary to offer some inducement to make the change acceptable and in one case men earning 10 cents hourly wages were put on a piece-rate calculated to give them 14 cents. Under the new stimulus they earn 25 cents an hour or over and three men do the work which took four. The instance is only one of several showing that time-payment gives a very uncertain basis for reckoning piece rates. Nobody knows until a trial has been made what the machine can be made to do. One method adopted in rate-fixing was to promise the men such a rate as would bring in a stated sum in the busiest times and it was agreed to make their wages up to a certain minimum in slack times and deduct the excess from future earnings. Good results are reported from the gang system of piecework in some large dye houses. Men engaged in similar work are formed into groups and their joint earnings are shared equally between them. Members of the gang engaged temporarily in work which cannot conveniently be rated by the piece are put upon a time basis and these day wages are pooled along with the piece earnings of the others. The advantage is that the men keep each other up to the mark.

The system is adopted by some of the large wool firms in paying woolsorters.

* * *

Expert opinion is all to the effect that the essence of profitable spinning is the avoidance of waste. Yet it seems to be possible to be a worsted spinning manager in Bradford and never to have weighed an ounce of waste in one's life. Perhaps because of this fact it is possible to be the manager's employer and to bewail the fact that the mill never had in any year brought in a profit seriously worth the risk of the capital. More careful managers are in the habit of causing each spinner's waste to be weighed carefully every day and compared with the weight from other frames producing similar counts. The method has two things to commend it. The responsible man learns who is careful and who is not and he discovers what his allowance for waste ought to be when calculating the costs of his several yarns. It is doubtful which of these two points is more important and it is a proved fact that by carelessness as to the origin, production and handling of waste a spinner can bring himself into insolvency without either himself or his accountants being able to say how he arrived there.

Another simple way of losing money and repute in worsted spinning is to buy tops irregularly from all sources, attempting to save a cent a pound and succeeding in never getting two deliveries alike. Following this practice persistently a spinner is able to consume quite a large part of the mushy and inferior tops in the market and by putting plenty of twist into the yarn he is able to disguise some of their deficiencies at the expense of throwing into high relief all their others. Allowing for lessened production the yarn probably costs every bit as much as yarn from sound and regular tops, but it is worth less. There is more trouble with it at every point and whenever trade falls slack the diligent producer of this class of article is the man to feel the pinch. Some pursue this roundabout way of business, but it does them less good than the simple course of taking a proper material to begin with and turn out yarn fully worth the top market price. It can be said briefly that the latter course has been the foundation of the largest fortunes in the worsted spinning trade.

* * *

To the manifest disappointment of inventors the British government inquiry into the transmission of disease by shuttle-kissing has not ended in a prohibition. The conductors of the inquiry were probably favorably enough disposed towards any action which might seem necessary. All three were civil servants—a chief factory inspector, a medical inspector and an ex-official of the weavers' union. They found shuttle-kissing uncleanly and potentially dangerous, but their business was with concrete cases and in no instance did the evidence justify the suspicion that the shuttles had been the vehicles of infection. Their remarks seem to hint that they would favor the compulsory use of self-threading appliances later on. They hope that factory inspectors will use their influence and keep the question to the front and so bring about a gradual adoption of improved shuttles. Should their hope not be realized within the next few years they would advise a reopening and reconsideration of the matter. The recommendation is thus not urgent, but local factory inspectors can doubtless be trusted to note regularly whether mechanical threaders are in use or not.

* * *

These are great days in England for new legal compulsions and restrictions. The Act is just coming into force which obliges every employer to pay towards the sickness insurance of his employes. Every few weeks sees the Government forced into intervention in some strike and new notions in State interference come along continually. Not the least prolific source is the cotton industry. Operatives' leaders are clamoring for the legal prohibition of all fines for bad work in the cotton weaving trade, despite the fact that their unions are powerful enough to see that injustice is not done. They are de-

manding too a curtailment of hours whereby work would be gradually reduced in cotton mills to 48 hours a week and Saturday would be a stop day. A number of manufacturers and the trade unions in general unite in pressing forward a new bill to restrain the promotion of cotton spinning companies. The promoters of superfluous mills proceed commonly by raising very little money on the security of shares and raising substantially all they need upon loan. Nobody can sell to them or work in their mills except on condition of making loans and, although there may be natural means of squelching this sort of enterprise, free-trade Lancashire inclines towards an artificial method. The proposition is that no cotton spinning company shall be allowed to begin business without making a statement of its projected expenditure upon land, buildings and equipment and without convincing the registrar of companies that shares enough to provide this sum have been subscribed by responsible parties. Whether Parliament will agree that the cotton industry requires a compulsory law different from that in the woolen, linen, silk and all other industries may appear in time.

* * *

The Fine Cotton Spinners, Ltd., the chief power in the Lancashire trade, pay 8 per cent. dividend for the fourth year in succession and show a profit of over four million dollars. The profit is about one-fourth of that which is regularly made by its large customer, J. & P. Coats, Ltd. Two members of that Paisley family have lately died, leaving estate valued for taxable purposes at roughly 16 1/2 million dollars between them. The occasion has recalled the founding of the sewing cotton firm in 1824 when a 60-foot factory and a 12 h. p. engine sufficed for all its needs. In less than a century the capital has grown to $52 1/2 millions, the reserves to $41 1/4 and the dividends for three years past have been at the rate of 35 per cent. Clearly, thread making is a better business than spinning even when conducted by a trust.

JAPANESE HABUTAE

The following is a copy of a circular issued by the Japanese Department of Agriculture and Commerce and giving an account of the system of inspecting habutae, a silk fabric manufactured in Japan:

Habutae is a silk tissue of solely Japanese invention. Its name itself is peculiarly Japanese. Its weaving has been in practice for over a thousand years now, though it was only twenty odd years ago that its sale abroad was tried for the first time. Ever since then, however, the exportation of the fabric has steadily grown in quantity, and it has increased in popularity among its foreign consumers year after year, until now, when its real merits are fully appreciated by them,—the merits of being of pure silk, delicately soft and smooth in texture, and deliciously pleasant to the touch; of embodying the best characteristics of silk; and of washing and wearing well. In view of this, the Japanese government has adopted the following method of inspecting habutae, with the object of permanently securing its sale abroad.

The practice in Japan of subjecting habutae to an official inspection at the Habutae Inspection Bureau has been in vogue for many years in Fukui, Ishikawa, Fukushima, Yamagata, Toyama, Miyagi and Niigata Prefectures, which are the principal centers of production for the fabric. But these Prefectures differing in the method of inspection, as well as in that of showing the results of the inspection, considerable inconvenience has been felt abroad by the dealers in the fabric and also by its consumers in knowing the genuiness of the article. In consequence of this, the Imperial Department of Agriculture and Commerce has issued an ordinance and made it compulsory for the prefectures concerned to carry out a very minute inspection, to ensure accuracy in accordance with methods prescribed by the Department, and to show the results of the inspection in a specified and uniform way. Another ordinance issued at the same time, forbids the erasement, concealment or removal of the testimonial thus recorded before the expor-

tation of the fabric, unless for some good reasons.

In consequence of the above regulation, all Japanese habutae to be produced during and after October, 1911, will bear a stamp giving accurately its quality, length, width and weight, in accordance with the forms, a copy of which is herewith reproduced. An exception however is being made of the habutae which is produced in extremely small quantities in the prefectures which do not carry out the inspection. it may be added, however, that inasmuch as the use of stamps and other certification-marks by individuals or corporate bodies, along with the regular inspection bureau stamps, is not prohibited, the article may be expected to bear more than one kind of certification-stamps, and it may be important for the dealers and consumers to note their distinctions.

To explain, next, the form of the certification-stamps and their use as specified by the Department of Agriculture and Commerce, they are as follows:

1. The certification-stamps for habutae, the use of which is authorized by the Japanese authorities, are of a variety as herein represented, and shall each bear the name of the Inspection Bureau which inspects the article.

2. The habutae which passes the inspection is classified into two grades as Class I and Class II according to its quality, and the stamps designating the class is used.

3. An article of inferior quality will bear the Form No. 3 stamp only.

4. All habutae which has passed the inspection shall bear the form No. 4 stamp, giving its length in yards (omitting all fractions up to 1/2 yard), width in inches (omitting all fractions up to 1/2 inch), and weight in momme (one momme is an equivalent of 3.75 grams), the figures being those ascertained at the time of the inspection.

5. The habutae which has passed the inspection may be possessed of defects (more or less conspicuous holes or other defects which have crept during the course of weaving), stains (noted at the time of inspection irrespective of their origin), and joints (a tear of two inches or more, place sewed up, etc.). In such cases, one or another of the forms No. 5 stamps shall be used according to the nature of the defects, the stamping being in such a manner as to partly overlap the form No. 1 or the form No. 2 stamp, as the case may be.

6. When a stamp, or one form or another is to be cancelled for some good reasons, the form No. 6 stamp is used over the original one, and a stamp of a correct description impressed by its side.

7. Form No. 7 stamp is used only for piece goods which resemble habutae in texture, which receive, however, a treatment different from that for habutae in accordance with the provisions of the habutae inspecting regulations which are made to have a single or double line across in green at a point about 3 1/2 inches from each end, in order to make clear the distinction between this kind of goods and the regular habutae, and which pass inspection on being presented for the purpose.

8. The "inspection"-stamp shall be impressed at each end of the goods, or across the two ends so that the two parts of the stamp will tally with each other.

It should be remembered that the Department of Agriculture and Commerce of Japan prohibits the following acts in order that Japanese habutae put on the market shall be of pure silk and also that its consumer may depend on its purity:

1. Moistening or wetting habutae for dishonest purposes.

2. Increasing or devising to increase the weight of habutae for dishonest purposes.

3. Concealing, erasing or removing the stamp or stamps impressed on habutae by the Inspection Bureau.

4. Dealing in or exporting habutae which is in violation of any or all of the preceding clauses.

The present regulations apply to usuginu (a kind of thin habutae), shikeginu (habutae in the weaving of which more or less doupion silk enters), shusu-habutae (satin-habutae), dyed habutae and habutae handkerchief.

The value of cotton goods imported into Netherlands India during 1909 showed a decrease of $952,745, but an increase of $2,702,661 over 1907.

A HAND BOOK OF WEAVES

By G. H. Oelsner, Director of the Weaving School at Werdau.

(Translated and Revised by Samuel S. Dale.)

(This series of articles began in July, 1911.)

Figs. 652 to 669 show other examples of this style of twill patterns. The limits of the pattern are indicated on most of these figures by a short line at the side and bottom of the draft.

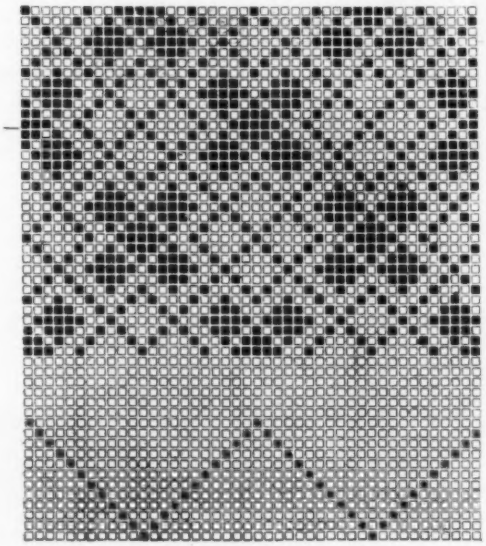


FIG. 663.

In Figs. 653, 654 and 655 the weave draft is extended to the full length of the filling pattern. In Figs. 656 to 671, the weave draft when given is carried out in the filling only far enough to show the full base weave.

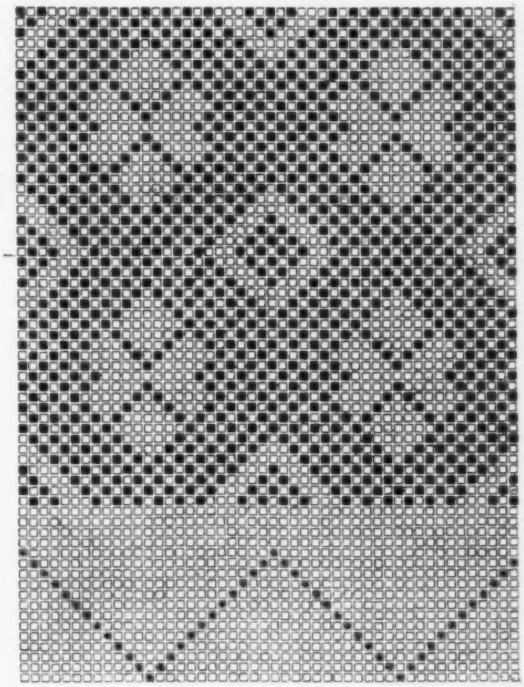


FIG. 664

The pattern is developed by reversing the weave in the filling to correspond with the drawing-in draft. Thus in Fig. 670 the picks

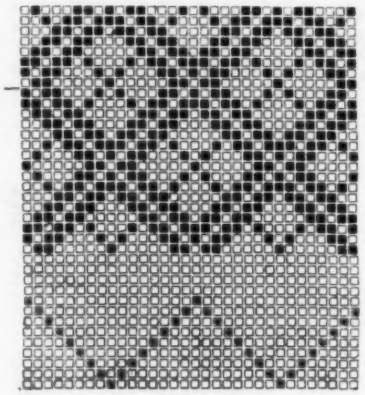


FIG. 661.

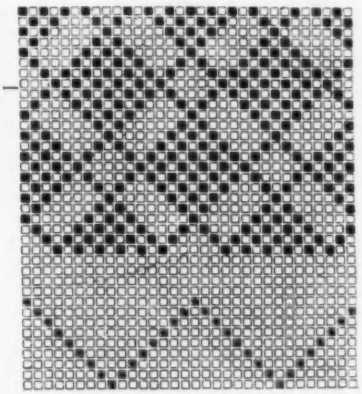


FIG. 662.

(Copyright, 1912, by Samuel S. Dale.)

FIG. 652.

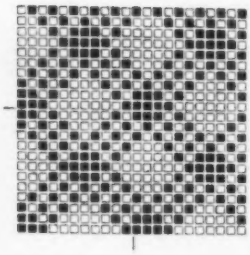


FIG. 653.

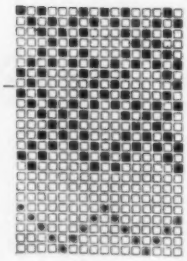
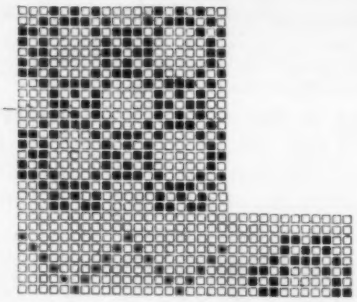


FIG. 654.



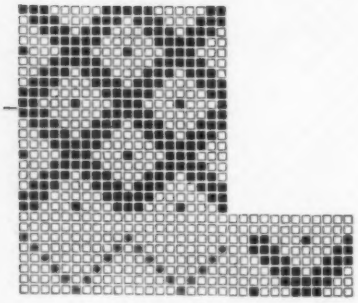


FIG. 655.

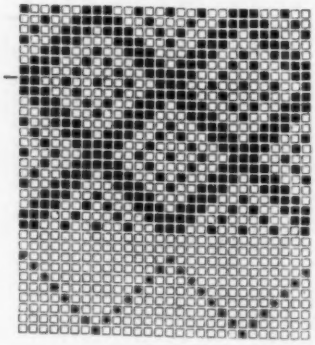


FIG. 656.

FIG. 657.

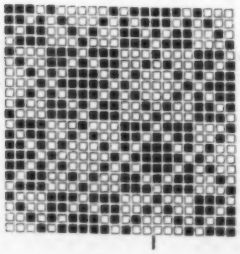
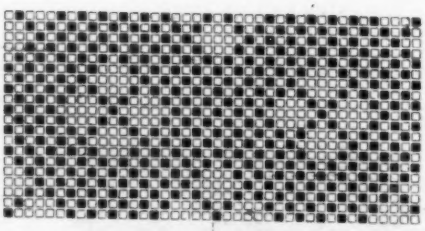


FIG. 658.



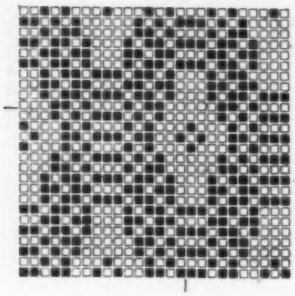


FIG. 659.

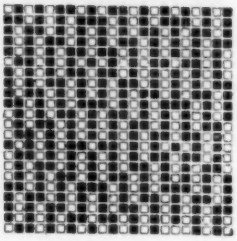


FIG. 660.

should be arranged as follows to correspond with the warp pattern: 1 to 8, reverse to 4, forward to 8, reverse to 1, forward to 5, reverse to 2, total 30 picks.

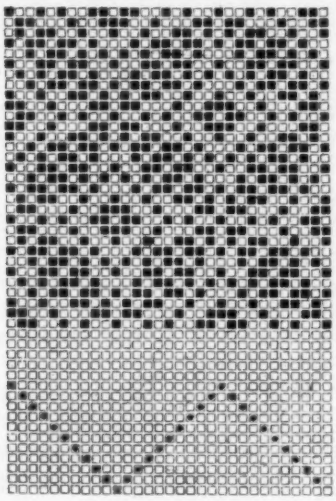


FIG. 665.

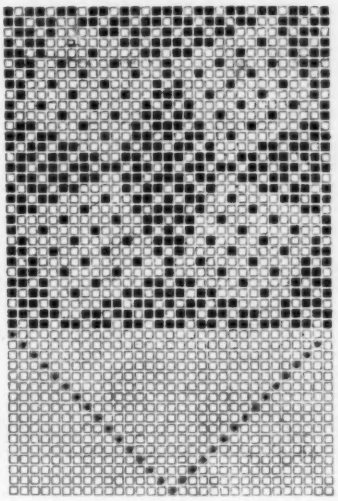


FIG. 666.

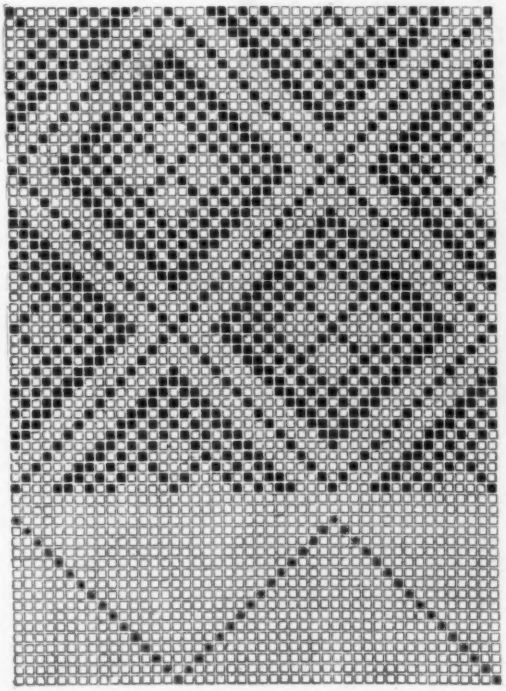


FIG. 668

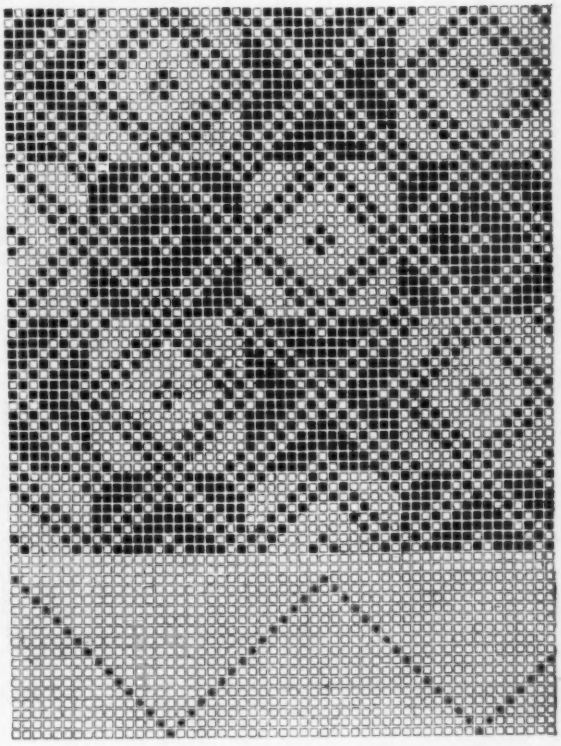


FIG. 669.

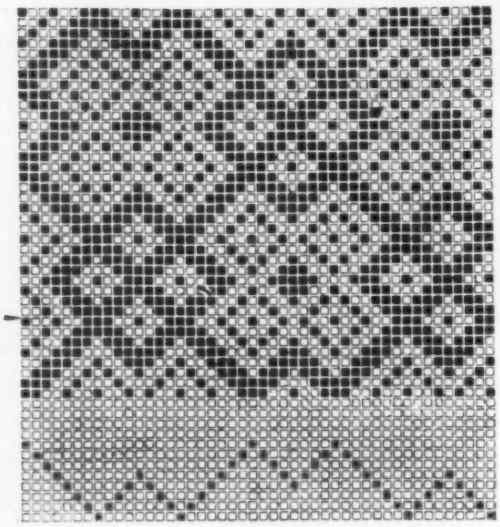


FIG. 670.

AN IMPROVED YARN GUIDE

The object of this improved yarn guide, which has recently been patented in the United States, is to provide a guide that can be threaded quickly and that will hold the yarn in place, preventing the tendency to whip out or balloon. The illustration shows the guide yarn and bobbin in operation. The yarn is drawn from the supply cop and directed into the opening. As the yarn is drawn into the crotch of the guide the pull on the yarn causes it to ride under the bend and out over the inclined side of the elbow. Continued pull on the yarn toward the eye will carry the loop over the elbow and along the cross-bar into the eye. As the yarn is drawn up through the eye with a rapid draft, in unwinding from the cop, there will be a decided tendency for it to fly out and "balloon" as illustrated. The direction of movement of the yarn in unwinding is indicated

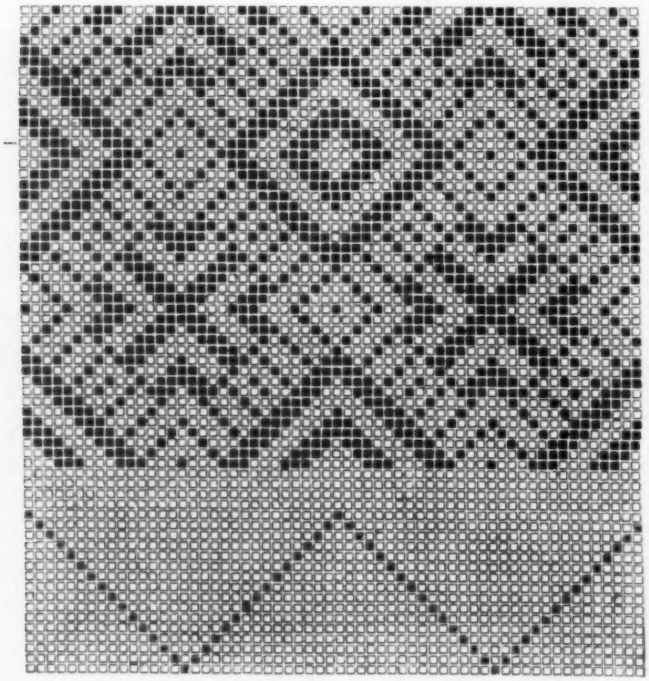
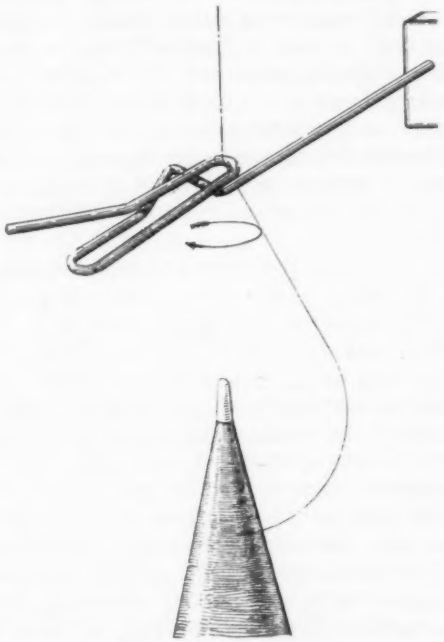


FIG. 667.

by the arrow, and as it swings around under the guide, the cross-bar prevents it from whipping out of the eye.

The guide as shown might be termed left-handed and where it is required to unwind the yarn in the opposite direction a right-handed guide is used; that is, the guide is formed with the cross-bar extending in the opposite direction and the other portions of the wire formed correspondingly. If the left-handed guide were used in the position illus-



AN IMPROVED YARN GUIDE.

trated for a cop unwinding in the opposite direction from that here shown the yarn would be liable to whip out and catch over the elbow. The left-handed guide, however, could be adapted for such use by simply turning it over.

The new guide provides for threading the yarn into the eye by drawing it up through the mouth or opening. In the usual helical form of the pigtail guide, it is necessary for the operator to give the yarn a turn under and around the spiral in threading it through the eye. This not only requires more time and care, but it is also liable to result in forming a loop or bight in the yarn which catches on the end of the guide. Unless the operator is very careful, the yarn is liable to loop around the wire of the guide, and then when it is taken up under tension, in delivering to the machine, the pull will break it and cause damage and loss of time. In the improved device there is no chance for the forming of a loop or bight in the yarn, as the end is drawn up straight from the cop and pulled into the crotch. The yarn is prevented from flying up and catching on the guide by the cross-bar which directs its course in whirling around the bobbin.

MILL EXPERIENCES

Under this head we will publish from time to time stories from practical mill men, telling of vexatious and unusual difficulties which have occurred in different branches of mill work, and how they have overcome them. We invite mill men to send us an account of such experiences. We pay of course for all that we use. Facts told just as you would tell the story to a friend are what we want, not fancy writing.

THAT FIRST OVERSEER'S POSITION

BY COLFAX

(Continued from May.)

As I started towards my desk the superintendent called to me, but I paid no attention to him and he left the card room, going direct to the office, as it later developed, and explained the situation to the agent. It would prove a difficult task to describe accurately my feelings about this time, as I hurriedly gathered up my few personal belongings, with the one thought in mind of quickly running away from the whole disagreeable situation. Talk about your brain being in a whirl; mine at that time was whirling at a speed that in anyone inclined to apoplexy or heart failure would surely have resulted seriously. I was thoroughly angered, humiliated, disappointed, discouraged and under the influence of this group of emotions I was surely seeing things red. Like the person who is suddenly thrust into a position of great danger and experiences the sensation of mentally reviewing the important events of his life, so it was with me at this time. Like a flash there passed through my mind a review of my experiences leading up to the securing of this first position, and during the three years that I had

been here. How I had worried and struggled to get this first overseer's place, the trials and troubles without number that I had met and overcome, the disappointments and heartaches I had suffered and the honest, earnest and strenuous effort that I at all times had made to do things a little better than they had been done before, or to accomplish a little more than was expected of me.

Yesterday I had found a great deal of satisfaction in the knowledge that my employers had confidence in me and that I was generally credited with being an efficient and level-headed young overseer with bright prospects that a successful career was ahead. Today, the indications were that I had undone most of what had been accomplished and in any case I had demonstrated that, although 23 years of age and posing as a man possessing some common sense, I was after all nothing but a kid.

My second hand and the boss spinner both urged me not to be hasty and to overlook the incident, or at least to go over the matter with the agent before getting out, but I was so thoroughly broken up that although I realized that I was acting foolishly and was probably making the mistake of my life, I would listen to no interference with my determination to get out. All this happened in much less time than it takes to relate it here and, though hurrying as fast as I could in getting my things together, before I had completed the work the clerk came up and reported that I was wanted in the office. This young man, by the way, was a sort of crony of mine and as he had heard the superintendent telling the agent of the situation and upon coming to the card room found me flushed and excited, he began to think the matter was more serious than he at first thought and used all kinds of arguments with me while on the way to the office, to keep cool and in any case not to insist upon quitting.

My first thought was to tell him that I would not go to the office and I probably would not were it not for the fact that he told me that it was the agent that had sent for me. I had always admired this man and while of course most of my dealings were with the superintendent, still he was a frequent visitor to my department and he had always treated me generously and kindly from the very first and we had many little chats together. He was one of those well balanced mill men who carry the burden of their position without any apparent effort, very broad in his views on all matters, careful and exact in his language, always exceptionally well groomed and a man all around that a fellow feels better for having known. As I neared the office the thought came to me that I was acting rather shabbily towards this man, in not at least offering to work some sort of a notice and this together with the arguments of my clerk friend decided me to cut out any further display of temper and while still determined to get through I would leave it optional with him as to whether I should quit at once or work a satisfactory notice.

I found both the agent and superintendent in the office, and without any delay the former asked me to explain just what the trouble was from my viewpoint. This I did, explaining how the boy had accidently put down the wrong lot, of my telling the superintendent the whole story, including my expressions of regret at the occurrence and repeating the remarks that he had made to me in the presence of the others and his insistence upon discharging the boy. I explained further that I regretted the accident as much as anyone and, while freely admitting that the superintendent was justified in criticising my management to a certain extent, it appeared to me that he had gone too far and that I did not intend to submit to the humiliation he had put upon me. As the only remedy I could apply was to get out I wanted to do so at once or, if they preferred that I should work until they got another man, I would be guided by their wishes. The superintendent here vigorously denied any intention of humiliating me or of having any desire to change carders as I had intimated, and he did not see any reason for my feeling as I did in the matter at all. The agent took up the subject here and expressed the opinion that it seemed to be an off day for both of us. He then stated to me very strongly that he was very sure I was en-

tirely wrong in thinking there was any feeling of dissatisfaction on their part. As to my taking offense at the superintendent's remarks, he laughingly said that when he was my age he very likely would have felt about the same as I did, but he softened this little knock at the superintendent by calling my attention to the fact that a man in charge of a mill has a multitude of vexing problems before him daily, and while this particular mishap was not in itself such a very serious one, it had come at a time when several more serious difficulties were at hand and it carried just enough annoyance to be irritating for the moment. Under the circumstances it was not to be wondered at that the man who had to shoulder all the troubles around the mill should at times lose patience and express himself accordingly.

I do not wish to give the impression that there was any special urging of me not to get through, because they made no reference to that at all, and I have no doubt had I shown any inclination to sulkiness either in manner or speech, the agent was just the style of man that would have handed me my little envelope and courteously shown me out. Their talk to me was a clean statement of the actual facts and during the talk the superintendent said that if the discharge of the boy who had caused the trouble was going to cause me any worry that I could send for him and put him at work again, or he would send for him himself. After listening to some further good advice, including a warning of the danger of being over-sensitive, the incident was considered closed and I went back to the card room, promptly sent for the boy and got busy on the mixed-up lot.

In the average small mill a happening of this kind usually leads to a lot of gossip on the quiet and this mill was no exception. While I was credited with having won out, I found no satisfaction in this distinction, but on the contrary I was depresed and ashamed for having been involved in the unpleasant incident and firmly made up my mind to try and secure another position as quickly as possible. As previously stated, I had a strong desire to engage with a weaving mill, but I wanted to get into a good one if possible and at any rate into a larger one than where I was now employed. With renewed vigilance I watched for changes of carders and wrote to a number of mills that appealed to me as being about the type I would like to be with. In most cases I was advised that my name had been filed for future reference.

It was perhaps a month after my flare-up that a new trouble developed that was eventually traced to me. The mill had received some sizable orders on goods colored to light shades. As the goods began to come to the finishing room a great many garments appeared unevenly colored and for a few days the dyer was a mighty busy fellow in his efforts to overcome the trouble. Of course the superintendent was very much worried as each batch came through and the imperfect garments seemed to increase in numbers. The stock used in these goods was a mixture of fine noils and cotton. As I remember it, there was 35 per cent. noils and 65 per cent. cotton. The dyer insisted to the superintendent that the percentages were not correctly weighed up from one lot to another, but as the superintendent weighed all lots going to the pickers he was sure the dyer was a little lame somewhere in his handling of the goods. I had talked with the dyer several times about his troubles and his talks about uneven weighing of the stock going to the pickers impresed me as reasonable and created a desire on my part to try and solve the problem.

It happened there was a lot of this stock just going through the pickers and though it was too late for me to reweigh this lot, my going to the picker room just at that time led to the overcoming of the trouble.

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The total exports of noils from the United Kingdom last year were 17,073,000 pounds, a slight decrease compared with 1910. In wool waste the exports reached the record total of 12,592,500 pounds. The shipments of noils from the district to the United States in 1911 showed a marked increase over the previous year, cashmere noils and cardings forming a large part of the exports.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

BLEACHING OUTING FLANNEL

Editor Textile World Record:

Can you give me a formula for bleaching outing cloths and flannels for ladies' dress goods? Can it be used in a washer or is it necessary to have a special machine for that purpose? I would also like to know how the goods are finished.

Bleacher (2037).

The first consideration in the bleaching of fine woolen goods is to have them as clean and free from traces of soap and other impurities as possible. It is a well known fact that many defects in woolen and worsted piece goods for which allowances must be made could be avoided if sufficient time had been given to the preparation.

The most common bleach for outing cloths is with sulphur, and for this purpose the sulphur house is still in use, but in mills making use of advanced methods, the use of baths of sulphurous acid is continually gaining ground. When bisulphite of soda is dissolved in water and the solution acidified with a sufficient quantity of oil of vitriol, sulphurous acid is set free and acts on the wool in the dye bath in exactly the same manner as the gaseous sulphurous acid does when in the sulphur house.

The bleach bath made with bisulphite of soda is prepared as follows: Commercial bisulphite solution standing at 76° Tw. is diluted with water in the proportion of eight gallons of the bisulphite to 1,000 gallons of water. To this is added five pounds of oil of vitriol, the solution being well stirred. The material to be bleached is entered and allowed to remain in contact with the solution for 30 to 45 minutes, in some cases longer. As the bisulphite solution is cheap, no attempt is made to use the spent bath a second time, consequently it is run off after being once used.

The sulphur house process, which is the one most employed, requires a sulphur chamber that is usually made of wood and in which is arranged a series of rails to serve as supports for the short poles carrying the goods to be bleached. The sulphur chamber must be as nearly air tight as possible. In one corner, or in the center of the chamber, is placed a pan of cast iron in which to burn the sulphur, and which ignites very readily when a few hot coals from a fire are placed on it. The goods to be bleached should be moist, and allowed to hang in the chamber over night. The doors and windows of the house are opened in the morning and the outside air is allowed to circulate in order to displace all sulphur gases before any of the hands enter to take down the pieces.

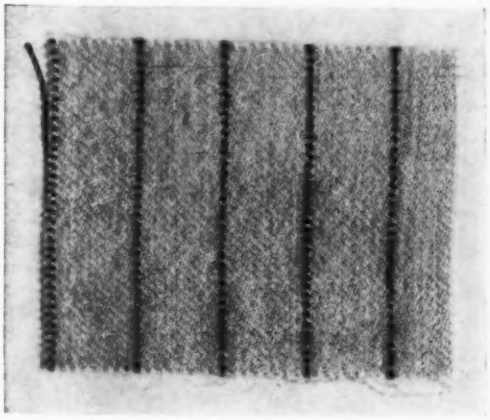
After being bleached, the goods are taken to the washers and washed thoroughly, and to the wash water there should be added one to two pounds of sal soda for every 15 gallons of water. The pieces should be run for about 20 minutes in this solution, which will remove the remaining traces of sulphurous acid gas. A final rinse in clean water then follows and the goods are ready to be "dyed white."

Mills making a specialty of fine white worsted goods, or similar fabrics could adopt to advantage the method of bleaching continuously in a sulphur house so arranged as to take the goods in at one end and deliver them bleached at the other, the time of such passage being calculated as to give the proper time in the sulphur gas.

Striped outing cloth requires that the colors used in dyeing the stripes possess the property of resisting the sulphurous acid, otherwise the finished result will not match the sample. Some colors, while not losing anything in intensity while under the influ-

ence of the sulphur, bleed considerably into the white. The following black dyes are found to be of sufficient fastness to sulphur bleaching: Naphtylamine Black ES8B, ES3B, ESN, Anthracene Acid Black DSN and DSFB, Naphtylamine Blue Black B and BD, while for shading there can be used Formyl Violet 6B, Anthracene Yellow C, and Tropaeoline OO.

The main point in the bleaching of piece



A SAMPLE OF OUTING FLANNEL.

goods with sulphur requires that the fabrics should be perfectly clean and, as previously mentioned, rinsed free of all soap and grease. It is useless for the bleacher to produce a perfectly white piece of goods if traces of picker house oils or soap remain. Many pieces of bleached worsted outing cloths look perfect as they come from the scour boxes and washers, but the tell-tale odor of soap indicates that the washing has not been thorough.

Goods otherwise perfect when bleached and subsequently dried and finished are liable to show yellowish or brownish shades, indicating the presence of wool oils still in the goods, and which sometimes form colored compounds with the sulphur fumes. It therefore becomes necessary to scour the goods in a light lather, rinse in a water containing a small amount of sal soda and finally in clear water. Rinsing should be done at a luke-warm temperature.

The ideal bleach for fine white woolen goods from a technical standpoint is with peroxide of hydrogen or peroxide of sodium.

Beta-Naphthol.

Our French correspondent replies to this question as follows: Goods like the sample of flannel enclosed are bleached with sulphur and, as a consequence, the colored yarn should be dyed with fast colors such as Alizarine Black, Chrome Black, etc. The method of finishing the goods is as follows:

1. Cleaning. All knots, flocks, bunches, etc., are removed from the back of the cloth by passing the piece over a machine shown at Fig. 2.

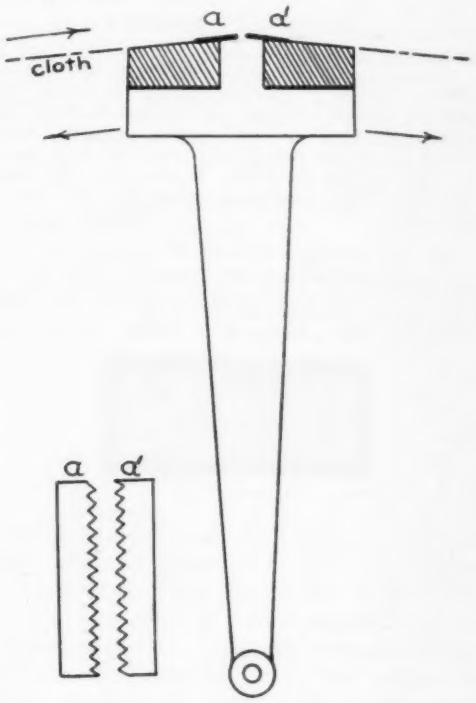


FIG. 2.

2. Fixing. The pieces are passed in the open width through water at a temperature of 176° F. and are then rolled and left under pressure for several hours. This operation removes the sizing from the warp and sets the fibers in preparation for the succeeding operations.

3. Bleaching. The goods are bleached

with sulphur by hanging the pieces over night in an air tight room filled with the fumes of burning sulphur, or by passing the cloth through the sulphur room by means of special apparatus.

4. Shearing. The face of the goods are sheared.

5. Steaming. The pieces are rolled tightly on perforated cylinders and steam is forced through the cloth. This removes the excess of luster.

6. Tentering. This passage over a tentering machine imparts an improved handle to the fabric and sets the piece at the right width.

Robert Dantzer.

SEERSUCKER EFFECTS

Editor Textile World Record:

I enclose a sample, shown at Fig. 1, of imported shirting which I have attempted to match, but without success. I get the crepe effect on the stripe, but it is not pronounced enough. After taking off the tension on the loom the ends begin to loop, spoiling the cloth. I am using 1/60s warp and 1/50s filling, 98 ends and 84 picks per inch in the loom.

Howard (2032).

In producing seersucker effects care is necessary in setting the harness and timing the motion by which the stripe is made. The ends for the seersucker stripe should be

FIG. 1.

drawn on separate harness and a somewhat larger shed should be made on those harness. The motion by which the stripe is made should be set so that the ends will be slackened when the reed comes in contact with the cloth. If "Howard" will follow these directions a good seersucker stripe should be the result. This stripe, however, would probably give a better effect if the ends were drawn two in an eye.

The ends in a seersucker stripe are generally crowded. "Howard" does not state whether he used a motion to make the seersucker stripe. I have seen these stripes made without a motion and also with different kinds of motions. When made without a motion the warp was harder twisted and run loose with the ends drawn in separate harness, making a larger shed than the harness for the body of the cloth. One motion, Fig. 2, consists in having the yarn for the seersucker pass around an easer rod as for a leno fabric. An elliptic cam is fastened on the shaft just inside the crank. An arm which is attached to the easer rod rests on the cam. In order to keep the arm in position a spring is attached to the arm and runs

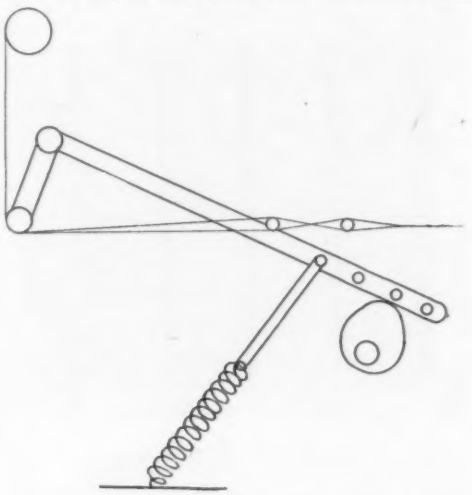


FIG. 2.

to the floor. The cam is set so that the yarn will be slackened when the reed is at the fell of the cloth.

It happened that just when I received the question regarding these cloths I was starting up a seersucker warp, so I made a few experiments with two motions and am sending six samples of the cloth to show the result. The yarn was drawn through the harness in separate sets, four harness for the body of the cloth and two for the seersucker stripe, with the seersucker harness in front.

No. 1, Harness level one inch from fell of cloth. Seersucker harness making same size shed as harness for body of the cloth.

No. 2, Harness level at fell of cloth. Seersucker harness making the same size shed as harness for the body of the cloth. In this case the picks could not be put in the cloth without the cloth sagging.

No. 3. Harness level with the crank at bottom center. Harness raised so as to make higher shed. Took picks easily because filling was beaten in the cloth in open shed. Seersucker stripe greatly improved as will be seen. Motion set in the three samples to move easier about one-half inch when reed was near fell of cloth.

No. 4, Changed the motion, using the one described in answer to "Howard." Harness level with crank at bottom center. Same weight on warp. Cam at highest point, slackening warp when crank was just past bottom center.

No. 5, Harness level with crank on bottom center. Increased weight on warp. Cam set as in No. 4.

No. 6, Harness level with crank on bottom center. Same weight as No. 4. Cam at highest point, slackening warp when crank was almost on front center; that is, with reed near the fell of the cloth.

The last sample is undoubtedly the best. Another experiment was made by setting the harness level with the crank between bottom and front center. In other words, the timing was later. The result was that the ends kinked. The following conclusions can be drawn from these experiments:

1. Have early setting of harness.
2. Have the seersucker ends slacked when reed is near the fell of the cloth.
3. Have the ends for seersucker stripe drawn through separate harness.
4. Have the harness for seersucker stripe make a higher shed than harness for body of cloth. Wasco.

The six samples have been forwarded to "Howard."

PRICE FOR PICKING OR GARNETTING YARN WASTE

Editor Textile World Record:

What is the price usually charged for garnetting or picking yarn waste? Picker (2011).

We are informed by one of the leading Boston dealers in wool waste that the price usually charged for garnetting or picking yarn waste, including carding, is 3 cents a pound; in exceptional cases 3 1/2 cents is charged. He states this is the price regardless of whether the waste is picked by a shoddy machine or run through a garnett machine.

BAD ROLLERS IN SPINNING

Editor Textile World Record:

In spinning worsted to low counts such as 2/5s and 2/7s what is the best method of preventing bad rollers in spinning? We use an 18 dram roving to rush the work through, and allow one inch over length of staple. Westward (2031).

The ratch may be lowered to advantage especially if the roving is moderately hard twisted. Try 2 inches over the longest staple even if an extra set of carriers have to be used, or put less twist in the roving. See that the traverse motion, which should be a heart motion, is kept in proper working order. Being out of sight this is somewhat neglected. Put no more weight on the front roller springs than is required for getting an even thread. John Brown.

OIL SPOTS ON HOSIERY

Editor Textile World Record:

I enclose one tan stocking with an oil spot on it, and two bleached stockings showing a black spot and oil spots. The tan hose is dyed with oil, dyestuffs and salt at a starting temperature near to the boiling point. The white hose is boiled out in 6 per cent. solution of caustic soda under pressure and rinsed thoroughly, then bleached by the lime process. Clayton (2024).

The oil spots in the sample of hosiery submitted are caused by the use of too much oil in oiling the machine. The black oil spot comes from the bottom of the stud of the dial of the machine. The fact that the oil spots did not come out in the scouring before dyeing or bleaching shows that the oil used is not stainless. The remedy is to use vaseline, not oil, for lubricating the machine. In using vaseline where oil has previously been used, the needle cylinder and dial should first be thoroughly cleaned with benzine. Then after the cylinders are replaced the vaseline is applied with the fingers on the cams in the cam ring. As vaseline is a good lubricant a machine thus greased will last at least a week.

Oil must not be applied to parts where vaseline has been used, otherwise the result

will be as bad as if the oil alone had been used. Where vaseline cannot be applied, a stainless oil should be used, so that if by accident it should get on the hosiery it will come out in the scouring previous to dyeing or bleaching. Oil and needle marks can be removed from hosiery before dyeing, provided the oil can be scoured out by a solution of good olive oil soap and sal soda. All goods that have the oily and black spots on them should be sorted out and scoured in the solution, then put with the regular batch. If vaseline is used on the cams of the machine the difficulty with oil spots will be overcome. The strength of the solution for removing oil spots must be determined by the amount of oil or grease to be removed, making the solution stronger by the addition of sal soda. The temperature of the scouring liquor should not be above 120° F. Water that is too hot has a tendency to set the oil spots in the goods, instead of removing them. Cyrus.

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THE WEIGHT OF JAPANESE HABUTAE

Editor Textile World Record:

The Japanese Department of Agriculture and Commerce has recently issued a circular on the official method of inspecting and certifying to the quality, length and weight of the silk goods known as habutae. The circular is being distributed in this country. The certificate gives the length in yards, width in inches, and weight in "mme." Please explain the meaning of the expression "mme." Silk (2039).

The expression "mme" is an abbreviation of the word "momme." The momme is a Japanese standard of weight equal to 57.972 grains (7.55 momme per ounce). For convenience in reducing to English standards 7 1/2 momme is taken commercially to be equal to 1 ounce, the difference being negligible in practice; by this commercial standard the momme is equal to 58 1/3 grains (7 1/2 momme per ounce). The weight of Japanese habutae is indicated by the weight in momme of 25 yards one Japanese inch (1 1/2 English inches) wide. Reckoning 1 ounce as equal to 7 1/2 momme, the momme standard has the following English equivalents:

58 1/3 grains (1 momme) per 25 yards 1 1/2 inches wide (1,350 square inches);

56 grains per square yard (1,296 inches);

1 ounce per 25 yards 11 1/4 inches wide (10,125 square inches);

.128 ounce per square yard (1,296 square inches);

1 pound per 125 square yards.

To find the total weight of a piece of habutae the process is as follows:

Ex. Find weight of a piece of habutae, 5 momme grade, 50 yards long, 27 inches wide.

27 (inches) ÷ 1 1/2 (inches) = 18 Japanese inches.

25 yards weigh 5 momme for each Japanese inch. Then:

18 (Japanese inches) × 5 (momme) = 90 momme, weight of 25 yards.

90 (momme) × 2 = 180 momme, weight of 50 yards.

180 (momme) ÷ 7 1/2 (momme per ounce) = 24 ounces, weight of 50 yards.

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NON-SHRINKABLE KNIT GOODS

Editor Textile World Record:

We are having some trouble with the color of our worsted goods which we put through a non-shrinkable bath. The fabric we are treating is what is known as a sanitary mix and contains a percentage of brown wool. What we would like to get is a good non-shrinkable process. Possibly you know of some method of bringing the clear white color back again after the treatment has yellowed it. We are forwarding sample swatches of the cloth before and after this process. The difficulty seems to be that the fabric turns yellow after going through the non-shrinkage bath. The fabric we are sending you is 50 per cent. worsted and 50 per cent. cotton, the worsted being on the face. The process which we use for treating the goods is muriatic acid and bleaching powder.

Gerrard (2041).

There is but one process for rendering knit goods non-shrinkable, and it has suffered very slight modifications at the hands of different workmen. The only practical way of rendering knit goods or wool fiber in any other form non-shrinkable, is to treat it with chlorine under certain conditions. It is immaterial whether the goods contain cotton or not. Although the cotton is not injured by the process, the fabric after having been treated should not be allowed to dry out until thoroughly washed. Lead lined tanks may be used for the process, but they are not a necessity.

The goods to be treated are scoured and rinsed free from all grease, and are made up into batches of sufficient size for proper handling. A solution is made by adding 7 1/2 gallons of commercial muriatic acid (about 73 pounds) of 35 per cent. strength, to 500 gallons of cold water. The material is then immersed in this bath for 15 minutes or until thoroughly saturated, then lifted and allowed to drain well, and, without rinsing, immediately immersed in a solution of 20 per cent. of bleaching powder calculated upon the weight of the goods. The goods kept in this solution for 1/2 hour during which time they are given several turns, then lifted and reentered into the muriatic acid bath, where they are kept for 20 minutes additional. Following this they are rinsed thoroughly and treated for 15 minutes in a bath heated to 100° F., and containing 50 pounds of bisulphite of soda per 500 gallons of water, then lifted and finally rinsed. This bisulphite bath is employed for the purpose of removing the last traces of hypochlorous acid from the goods, and also to correct the objectionable yellow tone which white wool takes on when treated with chlorine.

The bleaching powder bath above mentioned is prepared in the following way: fine, dry, chloride of lime containing 35 per cent. of available chlorine as determined by assay, is stirred to a uniform paste in a large stone crock or other suitable vessel with five times its weight of cold water. When all lumps have disappeared, fifteen times the weight of water is poured on the paste and the whole stirred and allowed to settle, after which the clear liquid is drawn off for use. It will be found convenient in carrying out this process to have suitable testing apparatus and chemicals at hand for determining the strength of the chlorine liquor, as but little reliance can be placed on Twaddell glasses for chlorine strength. Hardly two solutions of bleaching powder made at different times and showing the same degree on the glass will have the same content of chlorine, and it is the chlorine only that is of use in making the wool non-shrinkable.

In connection with the foregoing, it may be of interest to note that a scroopy or silk-like feel on goods treated as above can be obtained by passing the goods for 10 minutes through a bath containing 5 pounds of olive oil soap per 100 gallons of water, then souring off lightly in dilute muriatic acid, then whiz and dry.

A soft handle to the goods is given by passing the chlorine treated material through a bath made with:

¾ to 1 lb. Olive Oil Soap,
1½ to 3 ozs. Olive Oil,
1 oz. Ammonia (21% strength),
per 12 1/2 gallons of water.

The goods are soaked in this bath for 15 minutes, whizzed and dried. The bath is not heated. It should be further noted that wool that has been chlored or made non-shrinkable has a much greater affinity for dyes than wool not so treated.

L. J. Matos.

SIZING BLACK SATEEN

Editor Textile World Record:

We size black goods such as sateens, muslins, etc., with starch and dextrine, but the sized goods come up grayish looking because of the light color of the size. Please inform us if it is customary for finishers to add some coloring to their size in order to make the goods come up black, and if so, what they use. The sample enclosed shows goods partly treated with sizing and the balance untreated. The sized part looks grayish and is not near as good a black as the original.

Dairen (2047).

It is customary for finishers to add a black coloring matter such as logwood to the size, because, no matter how transparent the starch is, the lighter starch body, falling on the black, will always show a grayish top. An excellent receipt for the logwood solution was given by your French correspondent in the June issue: chip logwood, bichrome and water; this to be added to the sizing and well stirred.

Johann Strasse.

The number of cotton spindles in Yorkshire is in excess of 2,500,000, as compared with 3,500,000 of worsted spindles, and approximately 1,500,000 of the carded woolen trade.

Knitting Department

THE KNIT GOODS SITUATION

At this writing, selling agents and manufacturers are well distributed over the country, making efforts to get some of their spring business on the books, but a great many of them find they are only doing missionary work and that buyers generally are taking notes and passing the boys along with the understanding that they will place their orders when they go to New York later on. A few of the larger buyers have gone to the market, but it will be well into July before the majority of them arrive.

An optimistic feeling prevails among the most interested factors in the underwear business. It is felt that conditions in all lines of industries are showing a decided improvement. The country has apparently discounted a setback in business by reason of it being a presidential year. Stocks of underwear are of small volume and apparently it only remains for manufacturers to obtain profitable prices for their merchandise to make the coming year a most successful one.

The most talked about class of spring goods is men's 25 cent balbriggans. The production of this class of goods is very large, as a number of new manufacturers have gone into it during the past few years and several of those who were already in it have increased their production considerable. The same prices as were quoted last season prevail. These range from $1.67 1/2 to $1.85 for goods, weighing from 4 to 4 1/2 pounds, varying according to the trim and gauge.

The Diana Knitting Mills show a line, weighing 4 1/4 pounds at $1.75 and on which they put a rib border on the shirt and back strap on the drawer at $1.85. They also offer a line, weighing 4 1/2 pounds with hem tail shirt, and drawer with three buttons, outside band and laced back at $1.85.

The only line that we hear of as being offered at less than last season's price is a garment shown by Wm. Iselin & Co. weighing 4 1/2 pounds sold last season at $1.85 and is now being offered at $1.75. This firm shows a line of five-pound balbriggans at $1.90.

An examination of tables of yarn quotations will show the yarns cheap balbriggans are made from, run from 2 to 3 cents per pound lower now than during the month of June, 1911, and it is for this reason that many buyers are asking for lower quotations. The manufacturers make the claim, however, that the difference in the cost of the yarn is largely offset by the increased cost of making. They claim that wages are higher and also feel the effect of the 54-hour law recently passed in New York State.

Men's mesh shirts and drawers, running from 3 3/4 to 4 1/4 pounds are offered at $1.77 1/2 to $1.85; combination suits of the same fabric, at $3.40 to $3.50. This make of garment seems to be growing some in popularity and several manufacturers have added to their lines this season, boys' mesh suits at $1.80 to $1.90. These are bought mostly in the ecru color and made with short sleeve and knee length.

Manufacturers' prices on lines of 50-cent balbriggans are practically the same as last year and a very creditable looking 5 1/2-pound stained combed peeler, 28 gauge may be had at $3.25. This carries with it a hem tail shirt and horn button drawer. Sewed rib border may be added for 12 1/2 cents; loop tail for 25 cents; pearl buttons can be put on the drawers for 12 1/2 cents per dozen. Six-pound lines made with ribbed borders are shown at from $3.62 1/2 to $3.75. Some of these carry with them four pearl button drawer.

It is evident that the manufacturers of balbriggans have felt the inroads on their business by the increasing demand for men's combination suits. On account of this, some balbriggan manufacturers have added suits to their lines both in ribbed and flat fabrics.

The Ford Mfg. Co. have put in a number of Cooper spring needle machines and are

now offering to the trade ecru and white ribbed suits at $7.00 per dozen that buyers are taking quite freely.

The Piqua manufacturers are also showing men's suits made of Cooper cloth at $7.00; also single thread lisles at $9.50 and mercerized lines at from $12.50 to $14.50. Most of these lines run from about 7 1/2 to 8 pounds in weight. Suits of this weight have sold generally heretofore for summer garments, but of late there has been an increasing call for lighter weights. To meet this demand some of the Piqua manufacturers are now showing lines made of very fine combed yarns in peeler and bleached that weigh only 4 1/2 pounds to the dozen. These are very light and airy and are said to cause a man to forget that he is wearing underwear. The question remains whether there will be service enough in this kind of a garment to warrant its becoming very popular with the trade in general.

There is always more or less discussion at this time of the year as to how much headway nainsooks and meshes are making in replacing balbriggans. Certainly these two fabrics have effected the balbriggan business to quite some extent during the past two or three years. It is claimed, however, that during the season just past, there has been an increase in the volume of production of balbriggans quite in proportion to the increased production of the other two lines. No doubt the popularity of the meshes and nainsooks is due to a large extent to the advertising done by the B. V. D. and Porosknit people, and it is quite possible that some balbriggan manufacturers might take a lesson from these makers and create a more active demand for their production by a liberal use of printer's ink.

HOSIERY

The difficulty encountered by jobbers in procuring satisfactory deliveries of any kind of hosiery, with the possible exception of certain lines of men's half hose, during the last few months has had and is having its effect upon the orders being placed for next spring. Sellers report that buyers are showing no backwardness in placing orders and where prices are the same or only a trifle higher than for 1912, that they are buying in larger quantities. Some manufacturers are taking the chance of naming the same prices as for last spring, while others claim that it is unsafe and impossible to do so in view of the present condition of the market and the most that they will do is to guarantee their prices against a possible decline.

The prices on 200 needle Northern made low priced goods have been advanced to such a point that it is impossible for the jobbers to pay the advances. As nothing is made to take their place at prices that they could pay, they are forced to buy Southern made goods of 176 needles. This relates to goods made of carded yarn that did cost 67 1/2 cents, and for which 75 cents is asked; that did cost 75 cents and for which 82 1/2 cents is asked. The above are a few illustrative prices only. In the combed yarn goods around a dollar, there is also a slight advance in many lines, but not of such a prohibitive nature.

Slight advances are also asked for children's low grade stockings, but men's half hose can invariably be bought at the same prices for goods of equal quality and construction. More attention than ever seems to be paid to light weight cotton goods in the cheap grade, both in plain and ribbed top.

A very good number is being shown at 90 cents made with a deep welt, double sole and high heel and a very heavy business is reported on these goods. Many manufacturers believe, judging from the way orders are being placed, that they will very soon be comfortably sold up and that belated buyers will find prices materially increased on such lines as are still for sale, while many lines will be sold up altogether. It is not likely that any buyers will hold back their purchases expecting lower prices.

The reason given for the very sharp advance of carded yarn goods by one large manufacturer is that they have not heretofore figured the cost individually of making the hosiery and underwear which they produce and that they have found out that the underwear has been carrying a good part of

the cost of making the hosiery, and that when the hosiery cost was figured separately, it disclosed the fact that they had been making many styles at a loss. The result of discontinuing this practice are the higher prices put in force.

In goods costing about $1.75 not much change is to be seen, except that all numbers of thin lisles have a high spliced heel and many a double sole also. The former, at least, is absolutely essential in a good seller.

Plated, thread Tussah silk boots are being shown at about $1.85. These in most instances have the double sole and high heel. In fact, whenever the cost would permit it, the high heel and double sole have been added to all light weight goods at the various prices.

Artificial silk is to be seen in connection with many plated goods, especially men's half hose and infants' hose and it is claimed that when used as a plating, it is entirely satisfactory. It adds a high luster to the stocking, but is inclined to produce a hard feeling surface. It should not be used as the only material for making stockings under any circumstances, as without the lisle back it is worthless.

A misses' ribbed plated silk stocking to retail at 35 cents a pair for all sizes has been put on the market and a ready sale has been found for it. Men's thread silk half hose with high heel and cotton sole in the 25 cent grade are also being shown and a big business booked on them, according to report.

The full fashioned lines are being held back, due no doubt to the fact that it has been impossible for them to get their lines ready as early as usual on account of the pressure of immediate business. It is too early at this writing to comment intelligently on these lines. The German market, however, is very stiff and while some American buyers are reported as placing large orders, others, it is said, are returning without having placed their usual quantities. This is due entirely to the excessive advances. Some numbers which were to be had this year at M5.90, have been advanced to as high as M7.80 and M8—and other styles in proportion. This will seem unreasonable, but it is a fact nevertheless, and the Chemnitz manufacturers are finding a ready market for their goods, it is claimed, if not in America, then in Europe.

THE BOILING-OFF OF SILK KNIT GOODS

BY JAMES CHITTICK

(Continued from June.)

But with Asiatic silks 35 per cent. will be on the safe side to start with, and it can be reduced as experience may indicate. In making up the bath, the soap should be first finely shaved with a suitable machine or other appliance, so that when it is boiled up in the bath it may be completely and regularly dissolved. The volume of water employed should be sufficient to make a bath of 25 times the weight of the silk. Thus, for 100 lbs. of silk the bath would be a volume equal to 2,500 lbs. weight, of which 35 lbs. would be the soap and the remainder water. The water should be pure, soft and free from hard or calcareous matter, as the presence of such impurities is liable to diminish the luster of the silk. If only hard water can be had it must be previously treated in a suitable manner to overcome this difficulty. The temperature of the bath should be kept at 195° to 205° F., and it should not be allowed to boil, as not only would it be likely to tangle up the silk, but it would cause the yellow coloring matter which is present in the gum of some silks to be transferred to the fiber and become fixed on it, giving it a streaky yellowish tinge.

The skeins are turned in the bath two or three times, in the usual dye-house fashion, during a period of 60 to 90 minutes, and at first the silk will swell up a good deal and get very gummy, but as the gum begins to work off, and the fiber of the silk to appear, it will begin to show soft and lustrous. It is not easy to say exactly when the silk has been sufficiently treated, and rule-of-thumb methods generally determine this in most dye houses; this is particularly the case with white silks. The time required is not only modified by the quantity and hardness of the

gums contained in the silk, but also by the amount of the twist in the yarn, and, in the case of fabrics, by the closeness of the weave or construction.

A convenient arrangement in boiling-off white silk is to hang a small hank of yellow silk in the bath, and as this loses its color it is a guide as to how the stripping process is proceeding with the white. The boiled-off silk, when removed from the bath, is rinsed off in a weak soda solution and then wrung out. It is now of a creamy color and can be dyed in any medium or dark shade.

If the silk is to be put into white or delicate colors, it is better to use three baths, working the skeins 20 to 30 minutes in each. This can be done with two vats. After the silk has been turned in the first one, losing much of its gum, it is moved to the second bath and the first one is run off and refilled with fresh soap solution, which serves as the third bath. This third bath becomes the first bath for the next lot of silk, and the other, which has already been used once, acts as the second bath, and so the process goes on, each bath in this way being used twice. The thick waste liquor which is drawn off is a solution of sericin in soap, and when silk is to be dyed in coal-tar colors it is used as an addition to the bath and is known as boiled-off liquor.

Continuing the operation for silks for white and delicate colors, they are now boiled in a 10 to 15 per cent. soap solution. In this case the liquor actually boils. If the skeins are not liable to become entangled by the boiling they may be handled on sticks in open vats as before, otherwise the boiled-off hanks should be loosely tied together with smooth tapes, placed in coarse linen bags and boiled in copper boilers from one-half hour to three hours, according to the quality of the silk. The silk is then taken out, rinsed in a weak soda solution, rinsed in running water, wrung out evenly, and dried. In degumming silk goods in the piece, whether they be woven or knitted, they can be conveniently handled in a dyeing jigger by working on the lines indicated above. When it is a question of degumming finished articles of wear,—socks, gloves, underwear, etc.,—the case is different. These can be efficiently treated in a rotary machine, after the fashion of a skein dyeing machine, but with wire cages, or closed wire baskets attached to the arms. Care would have to be taken that the metal of the cages should be such as not to induce any discoloring or undesirable chemical action, and also that they be but loosely filled so as to give ample space for the gums to swell. In case such mechanical facilities are not available the silk may be boiled off in the following manner using any suitable wood or copper vats that have arrangements for steam heating, those with false bottoms, under which the steam is blown in, being preferable.

A quantity of stout, open-mesh cotton bags, about 12 to 18 inches in size, are prepared, the mesh being about one-quarter inch square. Into each of these bags the goods, to the weight of about one pound per bag, are loosely thrust (they should not be flat or folded, but well opened up) and the mouths are firmly tied with strong, undyed, cotton tapes. One hundred pounds of the silk goods, exclusive of the weight of the bags, is entered in the bath made up as previously described for 100 pounds of skein silk, and, as the bags float at first to the surface, an attendant with a pole or wooden rake must poke them under the surface and keep all of them constantly on the move, stirring up those from the bottom and pushing down those from the top, as the better they circulate the more even will the degumming be. This must be most carefully attended to.

If the silk is all white stock, there is no objection to the liquor boiling as there are, in this case, no threads to tangle and no yellow color to set on the fiber. The boiling may take from one to two hours, according to circumstances. After boiling for an hour, one of the bags may be opened and examined, and the condition of the contents will be a guide as to how long to continue the operation. If the goods, or any of them, are made of yellow silk, the temperature had better be kept below the boiling point. After this boiling, the liquor should be run off and the bags put in the hydro-extractor and the

gumming liquor whizzed out of them.

A second bath is then prepared with a 10 to 15 per cent. soap solution, as already described, and the bags are entered in this. With the same careful turning over and over, they are actively boiled for half an hour to an hour in the case of white silks, and longer for yellow silks. The bags are then removed and whizzed in the hydro-extractor, and are then opened and the contents taken out and rinsed, first in a weak soda solution, and then in pure water, and are finally wrung out and dried. The vat liquors can be used alternately as described in the case of skein dyes.

Attention must be paid to the bags which should be kept in good condition. In time the mesh has a tendency to get smaller, which interferes with the free circulation of the bath liquor. They must then be replaced by others with full sized mesh as occasion requires. The foregoing observations will illustrate the principles of the boiling-off of silk and silk goods, and the methods which will be found effective in practice. At the same time there are so many conditions that differ in almost every individual case, that the dyer should treat experimental lots as a preliminary to larger operations, and, according to the character of the goods being treated and the nature of the silks of which they are composed, so will the percentages of soap to be used and the length of the boilings vary, and so also may the mechanical treatment require modifications.

AN IMPROVED SWEATER COLLAR

The Adhesive Gimp Mfg. Co. of Valatie, N. Y., have purchased the patent rights for the sweater collar illustrated in our June issue. They will make the garments themselves with the new collar, selling direct to the jobber. They are the only licensees privileged to make this improved collar.

The number of operatives employed in the 35 cotton spinning companies of Japan was 18,337 males and 67,462 females, the average wage paid per day being 22 cents to males and 14 cents per day to females.

FULL FASHIONED HOSIERY

BY NOISETTE

When the manufacture of hosiery was introduced into this country, the American built machines were all adapted for seamless goods only, and the full fashioned article, now so popular, was an exclusively foreign product. The superiority of the full fashioned stocking over the seamless was recognized, and an increasing demand for

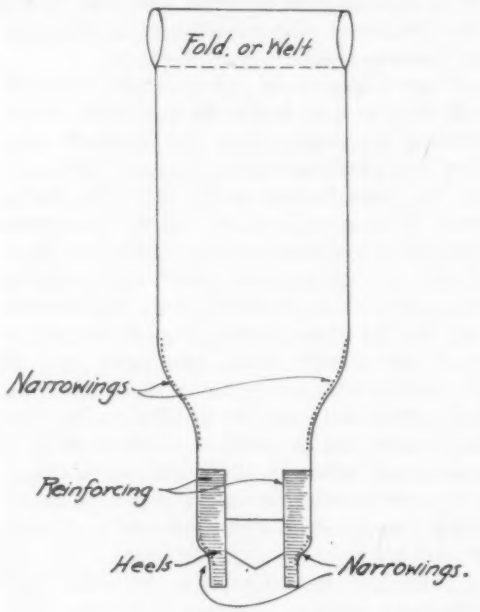


FIG. 1

full fashioned hosiery soon convinced manufacturers here that they must make the goods. To do this involved a large investment, as full fashioned knitting machines are very expensive. The business has been profitable and new mills are being built for manufacturing full fashioned hosiery.

The first of these machines that were imported into this country made a very coarse class of goods, but at the present time fashioned goods range from 24 to 51 gauge. The 24 gauge has 16 needles to the inch, and 51 gauge would have 34 needles to the inch, the latter being used for the finest class of hosiery. The most popular grades of silk hosiery are made on 39 or 42 gauge ma-

chines having high spliced heels and toes, reinforced soles and mostly split feet.

The machine upon which these goods are made is capable of producing from 12 to 24 stockings at one time, and each section, or head, as it is called, is really a miniature knitting machine in itself, having its own yarn carriers, reinforcing yarn carrier, etc. Whether the machine has 12 or 24 sections, the sections all work together from one cam shaft. The making of the stocking is divided into two separate operations. The leg is made on one machine. The foot being much narrower, requires another machine on which there is a different system for narrowing, and to form the diamond toe, a characteristic of the full fashioned foot.

The first part made is the leg, commencing at the top, or welt. The machine is turned for one revolution in order to form the first loops in which to hang the welt bars. The welting bar performs a very important part in the making of the fold or welt, and it contains as many hooks as there are needles in a section. These hooks are inserted between the needles in order to catch the first rows of loops. To these the others are added, as the fabric is being knit. The welt bar is now left on until the fold or welt is the desired length, and then the loops that are on the welt bar are transferred back to the needles, and the welt is made. The next revolution of the machine fasten the loops on the needles together, and the machine is allowed to run until the portion of the stocking is reached where the actual fashioning begins. The shaping is accomplished by a set of narrowing fingers which contain transfer or narrowing points. These fingers when set in motion dip down and between the needles and the stitches. When rising the stitches cling to the transfer points and are carried in, two needles on each side, and dip again in the same position in order that the sinkers may hold the work on to the needles when the fingers rise, in the act of finishing the operation. This leaves the fabric four needles narrower each time they operate. That is to say two needles on each side of a section are thrown out of use each time this operation takes place. The width of the stocking is thus reduced, to conform to the shape of the leg and the ankle. When the ankle portion is reached, a reinforcing thread is introduced, which strengthens or splices the back portion of the stocking. After this splicing has been run in for about 2 1/2 inches, the instep is pressed out, and the formation of the heel commences. When the heel is made the proper length, the narrowing fingers are again brought into operation to shape the heel, and the stocking is shaped as at Fig. 1.

The leg is now ready for the footing machine. It is first placed on a topping bar with the heels turned out straight, as at Fig. 2. Then it is transferred from the needles of the topping bar to the needles of the footer. The machine is now ready to continue the knitting, until the foot is made. When this point is reached the stocking is ready for the looping of the toes and heels on a machine especially designed for that purpose. After it is looped, the stocking is taken up again by the seamer, and all that remains to be done to make it into a complete stocking is to seam the selvages together from the toe to the top of the welt. When this is accomplished the stocking is examined for menders, and if any are found, skilled operators do the necessary mending. After a final ex-

FIG. 2.

amination, the goods are dyed to shade. They are then passed on to the boarders, who place them on shaping boards, and run them through a press in order to get the luster desired. They are then paired, folded and packed in boxes ready for shipment.

MANUFACTURING ATHLETIC OR BASE-BALL HOSIERY

BY DENBIGH

The sample stocking shown in the illustration is what is called alternate stripe baseball or football hose. The legs are made on a circular latch needle machine with automatic stripers to make the changes from one color to the other. These can be made in different patterns by grouping the needles in the machine and using different cams. Any two color stripe can be obtained by building the chain which operates the striping lever cam so that it will operate and put in the stripe in any part of the stocking. The sample stocking shown was made on a 4 3/8 inch machine with needles grouped 2 in 1 out on the cylinder and 1 out 2 in on the dial. This will bring the needles in opposite positions and with a long tailed cam will enable a very loose stitch to be knit on heavy yarns and prevent making drop stitches which would be the result if short tailed cams were used. These cams should be used in the dial only and then the stitch chain should be built. This is what operates the stitch cam, giving the plain and tuck stitches that forms the leg and ankle. The slack course is put in to cut by and is used by the girls to loop with when footing.

In building this chain start with the slack coarse link which is a large one and sets on the side of the chains. Then connect twenty-six No. 1 links which makes the cuff or top of stocking in a plain stitch. A No. 4 link is then put in, changing the stitch from the plain to a tuck. Eighty-eight No. 1 links are put in for the lengths, and one No. 4 link is added, changing back from the tuck stitch to the plain, and thirty-one No. 1 links more are added which makes the ankle. When this is knit it should measure 6 inches in the cuff or top, 14 inches in the calf, 10 inches in ankle, or 30 inches over all. The stripe chain for the pattern should be built to divide in the stitch chain so that it will start and end striping with the tuck stitch, as shown in the illustration. If it does not end and start with a tuck stitch the goods look very bad. This chain is built of No. 1 and 4 links and the stripe is usually 2 inches in width. This may be made smaller or larger

STRIPED BASEBALL STOCKING.

in order to divide equally the No. 1 links, used for the length of the stripe. The No. 4 links are to operate the striping lever cam and bring it in line with the striper ratchet lever which throws the different colors in and out.

These machines produce from five to ten dozen pairs per day of ten hours. A production of about eight dozen could be obtained like sample enclosed, with an allowance of 2

ounces of waste per day. These stockings weigh about four pounds per dozen. After the legs are knit they are taken to the footing machine. This work is done by young girls who receive 13 cents per dozen pairs. They take the legs and pick the stitch onto a cup which has the same number of needles or points as the legs have. After getting the stitches on, the points are raveled down by hand. When this is done the cup is placed on the needles in the footing machine and the leg is pulled down. This draws the stitch off the transfer cup points onto the needles in the footing machine. This automatic machine then makes the heel and toe and when the foot is finished it stops and throws the stocking off the needles. The machine stops in such a position as to be ready to receive another stocking immediately. The girls can foot from 20 to 25 dozen pairs per day in a day of 10 hours.

After the stockings are footed there is an opening left at the toe which has to be looped on the looping machine. The stocking is then taken to the crochet machines which crochets and trims it in one operation. This is done to cover the raw edge left at the top or cuff of stocking. It is then inspected and mended when it is taken to the boarding room and placed on boards of the size and shape wanted, after which it is put in a steam box where it is left for about ten minutes. This operation sets the stocking and it is then taken to the dryer and dried on the board. The goods are next taken off the boards and mated for length, when they are banded together and boxed in 1/2 dozen pairs and are then ready for shipment. These stockings retail from 50 cents to $1.25 per pair according to quality of yarn, and are in great demand in season.

DROP-STITCH MECHANISM FOR KNITTING MACHINES

This mechanism which has recently been patented, is designed for knitting drop-stitch hosiery. Fig. 1 is an inside view of the cam cylinder employed; Fig. 2 is a sectional elevation taken on the line 2—2 of Fig. 1; Fig. 3 is a similar view on the line 3—3; Fig. 4 is a partial bottom view of the cam cylinder; Fig. 5 is a partial view corresponding to Fig. 1, but showing one of the lifting cams for the drop-stitch needles in raised position. Fig. 6 shows the slide ring; Fig. 7 shows a vertical section of the needle cylinder through one of the needle slots which is provided with a hub-projecting jack.

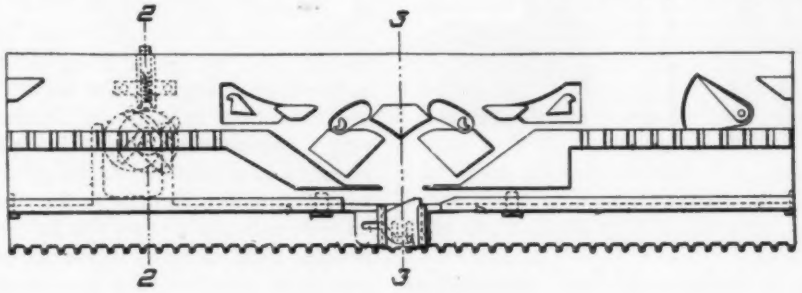


FIG. 1.

Figs. 2 and 3 show a needle cylinder carried by a supporting ring mounted in the machine frame as usual. The inclosing cam cylinder is provided with a bevel gear through which it is rotated, and with fixed and movable cams for effecting the vertical movements of the needles as required for ordinary circular knitting, and for the narrowing and widening operations.

The drop-stitch effect generally desired for hosiery requires the joint operation of adjacent drop-stitch needles rather than single needles, and this invention provides for operating upon a plurality of adjacent drop-stitch needles. The main object is to enable the continuous knitting of stockings in which the drop-stitches appear in both the front

and rear portions of the leg, but are stopped at the rear by the raising of first one and then another of each pair of series of adjacent drop-stitch needles provided therefor, so as to engage these needles upon the threads preliminary to the knitting of the

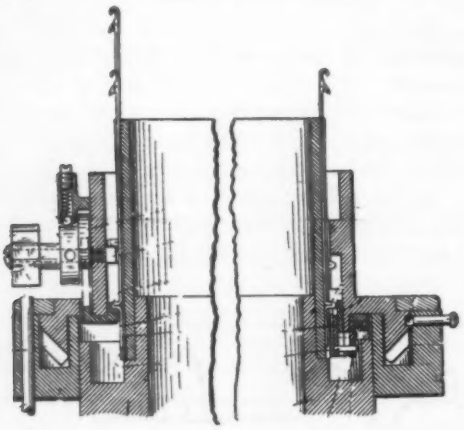


FIG. 2. FIG. 3.

foot, while the front drop-stitches are continued.

The usual latch needles are employed as shown, having short hubs as usual for the

FIG. 4. FIG. 5.

rear half. As my invention provides that these needles, after they have been lowered to form drop-stitches, shall be automatically raised into action singly instead of jointly, certain of the needle grooves in the needle cylinder are provided, as shown in Figs. 2 and 7, with wedge-offsets which form jacks adapted to bend outward the hub ends of the lowered needles therein, so that needles may be separately raised as hereafter more fully referred to.

When a separately formed stocking top is attached to the needles, the drop-stitch needles are lowered in pairs, as indicated, to form a desired number of double drop-stitches spaced apart around the leg of the stocking. To facilitate this operation a notch leveling-ring is provided in the cam cylinder, the notches of which are sized and spaced so as to permit the passage in pairs of the desired number of rear-half needles, the front-half drop-stitch needles being removed from the cylinder. The needle cylinder being raised as usual, and the leveling ring of the cam cylinder being properly set by pushing a locking pin into an engaging recess in the cam cylinder, the lowering of the needle cylinder permits the drop-stitch needles only to pass through the notches of the leveling ring; and when the cam cylinder is released and rotated the drop-stitch needles are all lowered by the fixed cam of the cylinder so as to bring their hubs into inoperative position in the lower course while the operating needles are leveled upon the ring. One needle of each lowered pair being engaged in a needle cylinder groove which is provided with a jack, is bent outward so that its hub extends beyond the hub of the other needle, thus producing the same effect as would be produced by providing the bent needles with a different length of hub.

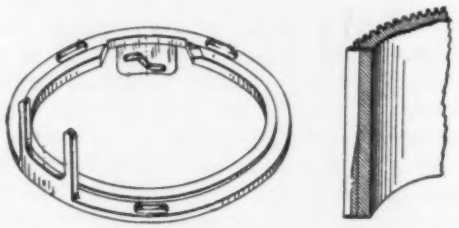


FIG. 6. FIG. 7.

KNITTING CUFFS ON LAMB MACHINES

Editor Textile World Record:

I am using a five cut Lamb machine to make cuffs for shaker sweaters and am using every other needle on both beds, making practically 2 1/2 cut work. In setting up I knit a course then rack the bed over 1 needle, getting a fairly smooth cuff. But when I put in a separating thread and then knit one course on the next cuff I rack the bed back the 1 needle that I racked in the former cuff, but the work comes out very rough. I would like to know the reason for this as I draw the same stitch on both. Knitter (2035).

To get the desired results it will be necessary to rack the needle and a half, but when they have the rack and have the plates set

central, rack half a needle and knit one course. They make one needle rack and make another course and at the end of the course. Then make one needle rack and the plate again. This is the way we make our cuffs when we have every other needle down, but "Knitter" must not attempt to make a needle and a half rack all at once.

Lamb Knitting Machine Co.

AN IMPROVED KNITTING NEEDLE

The illustrations show an improved knitting needle, recently patented in this country, and described as follows:

Fig. 1 shows the parts of a needle disconnected from one another. Fig. 2 represents the parts of the needle applied to one another, but not secured together; Fig. 3 shows the needle in its finished condition; Fig. 4 is a transverse section on the line a—a, Fig. 3; Fig. 5 is a transverse section on the line b—b, Fig. 3. Figs. 4 and 5 are on a larger scale than the remaining figures of the drawing.

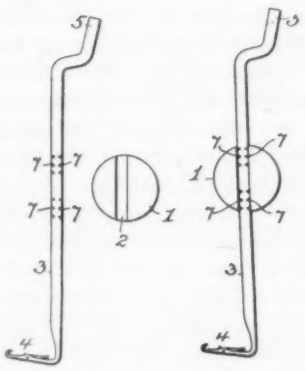


FIG. 4. FIG. 5.

Heretofore needles such as those to which this invention relates have been provided with a segmental bend in the stem of the needle, to constitute a pivot member, but in making these needles it is very difficult to locate the pivot bend in accurate relation to the needle and to that end of the needle stem on which the cams act to impart movement thereto. In the improved needle a pivot member is provided which can be accurately adjusted on the stem of the needle and secured to the stem beyond risk of displacement. This may be accomplished by soldering the pivot member to the stem, but it is preferable to dispense with the use of solder or other extraneous means for effecting the desired connection.

A block, 1, preferably circular, has in one of its faces a transverse groove, 2, of such width that the stem, 3, of the needle will fit

FIG. 1. FIG. 2. FIG. 3.

snugly therein, and of such depth that the side walls of the groove will project to some extent above the face of the needle stem when the latter has been seated upon the base of the groove. By means of a suitable positioning gage the block, 1, is first disposed upon the stem of the needle in its proper relation to the needle, 4, and to the end, 5, of the needle stem upon which act the cams for imparting swinging movement to the needle, and the block is then secured to the stem. This may be done by soldering or brazing together the needle stem and block, but it is preferable to effect the connection without the use of solder by applying pressure to the grooved face of the block upon one or both sides of the groove, preferably upon both sides, so as to displace the metal acted upon and cause a portion of it to flow over the stem of the needle and thereby confine the latter so firmly in the groove of the block as to not only prevent it from being forced out of the said groove, but also to prevent any longitudinal movement of the block upon the needle stem.

In the needle shown in the drawing, pressure has been applied to the face of the block at two separated points on each side of the groove, thereby displacing the metal at these points and causing the displaced metal to form fins, 6, which overlap the stem of the needle, as shown in Fig. 5. In order to aid the displaced portions of the metal in the performance of their intended function, the needle stem is preferably notched in those portions where the fins engage it, such notches being shown at 7, the notches being preferably tapered or beveled, as shown in Fig. 5, whereby, when the displaced metal flows over the stem of the needle the inclined bases of the notches will act as wedges and the needle stem will be forced firmly into contact with the base of the groove, 2.

Dyeing, Bleaching, Finishing, Etc.

THE ACTION OF GLAUBER'S SALT IN THE DYEING OF ACID COLORS ON WOOL

By Arnott R. Broom, Winner of the Textile World Record Gold Medal at the Philadelphia Textile School.

The part played by sodium sulphate, commonly known as glauber's salt, in the application of acid colors to wool is but imperfectly understood. With the effect we are perfectly familiar, but as to the cause we know little or nothing definitely. Dreaper in his "Chemistry and Physics of Dyeing," states that "the direct action of the acid is modified in some way by the presence of sodium suiphate or sodium chloride. Sodium sulphate is one of the products of the direct change which takes place between the color and the salt" (or between the acid and the dyestuff), "and by largely increasing its mass in the solution by direct addition, the point of equilibrium is pushed back and more free acid remains in solution. Therefore by the addition of sulphate the dye is stripped from the fiber. These facts seem to be in accordance with the laws of equilibrium."

ARNOTT R. BROOM.

From the above, the inference may be drawn that the greater the amount of glauber's salt present the slower will be the interaction of the dyestuff with the acid, which need not necessarily be sulphuric, and consequently slower and more even dyeing will take place. This we actually know to be the effect and the object of this investigation is largely with the idea of proving or disproving the above explanation of the cause. It may be stated here that more work than the writer has been able to accomplish to date will be needed to make the results conclusive, but so far they have been very encouraging. The idea was to make dyeings with varying amounts of glauber's salt and then determine quantitatively the amount remaining in the bath after the dyeing and the amount, if any, absorbed by the fiber; also to determine if the amount absorbed was the same for varying amounts of salt taken and if not whether there was any relation between the amount employed and that absorbed. If the amount absorbed was always the same by weight or inversely proportional to the amount added, then it might be justly inferred that the action of the salt was purely physical and dependent upon the mass remaining in the dye bath physically interferring with the interaction of the dyestuff and acid according to the law of mass action.

Cyanole Extra was selected for use in the dyeings for the reason that it is not precipitated by barium chloride in the presence of hydrochloric acid and consequently would not interfere with the quantitative determination of the sulphate. The color was purified to remove from it any sulphate or chloride of sodium, by extraction with abso-

lute ethyl alcohol in which the color is readily soluble. This extract was evaporated and the dry residue of purified Cyanole Extra used in the experimental work.

Dyeings were then conducted under identical conditions as to temperature, time, amount of water, etc., as shown in Table I.

TABLE I.

Exper. No.	% Dyestuff	% Oil of Vitriol	% Formic Acid 50%	% Crystallized Sodium Sulphate
1	1	—	4	20
2	1	—	4	40
3	0	—	4	20
4	1	—	4	10
5	1	—	4	0
6	1	4	0	20
7	0	0	0	20
8	1	0	0	20

The skeins after each dyeing were carefully rinsed in distilled water, which wash waters were added to the residual dye baths in each case. The amount of sulphate remaining in the bath was determined and calculated to crystalized sodium sulphate. The formic acid employed was free from sulphate.

The results of these determinations are shown in Table II.

TABLE II.

Exper. No.	Weight of Crystallized Sulphate Taken	Weight Found in Bath	Weight Absorbed by Fibre	Amount Absorbed as % of Weight Taken
1	1.0	.7068	.2932	29.32 %
2	2.0	1.8470	.1530	7.65 "
3	1.0	.6806	.3194	31.94 "
4	0.5	.2335	.2665	53.30 "
5	—	—	—	—
6	1.66	1.1870	.4730	29.20 "
7	1.0	.9321	.0679	6.79 "
8	1.0	.9360	.0640	6.40 "

All skeins dyed weighed 5.0 gms. each

From the above results it is clearly shown that glauber's salt is absorbed by the fiber and retained by it or at least the negative part of the salt is. There also appears to be a comparatively simple relation between the amount absorbed and that added and this appears to be in an inverse ratio. Thus in experiments 1 and 3, taking the same weight, 1.0 gram, approximately 0.3 gram was absorbed, while in experiment 2 where twice as much was taken, only half as much was absorbed by actual weight. Experiments 7 and 8 show that without acid present the fiber absorbed approximately 6.6 per cent. of the glauber's salt used and that the addition of either formic or sulphuric acid greatly increases the absorptive power of the fiber. By experiments 1 and 6 in table II it is shown that the amount of salt absorbed is approximately 29.25 per cent. in each case or an increase of 22.65 per cent. This may account for the necessity in dyeing of adding an amount of acid far greater than necessary to liberate the color acid from the dyestuff.

As is evident, this work must be carried much further and also should be verified with other dyes, but the writer feels safe in stating that as the amount of glauber's salt actually absorbed appears to bear an inverse ratio to that added to the dye bath, there must of necessity be proportionately that much more remaining inactive chemically, the more we add at the beginning of the dyeing. This is consequently in support of the theory that the glauber's salt acts, in proportion to its mass, by physically interfering with the action of the acid on the dyestuff and the subsequent combination of the color acid with the fiber.

A PROCESS OF FINISHING FANCY GOODS

This process is the invention of Joe Wilkinson, Bradford, Eng., who has assigned the patent to the Bradford Dyers' Association. In the patent specifications the inventor gives the following account of the process: In the manufacture of fabrics of artificial silk threads, either combined with cotton threads or without cotton threads, mainly owing to the lack of elasticity of the artificial silk threads, difficulty is experienced in weaving the warp threads in the required positions and at a uniform tension. The object of this invention is to overcome these difficulties and to obtain an improved fabric of artificial silk threads or of artificial silk threads and cotton threads. Yarns composed of artificial silk threads twisted with woolen or other threads of animal fiber, either in conjunction with cotton yarns or

not, are woven into a fabric. The fabric is then treated to destroy the animal threads, preferably with caustic alkali. A delicate fabric composed of artificial silk thread or of artificial silk threads and cotton threads is thus obtained.

The claims covered by the patent are as follows: Weaving together weft threads and yarns of artificial silk threads twisted with threads of animal fiber to form the warp with the required elasticity, and afterward destroying the animal fiber leaving warp threads of artificial silk only.

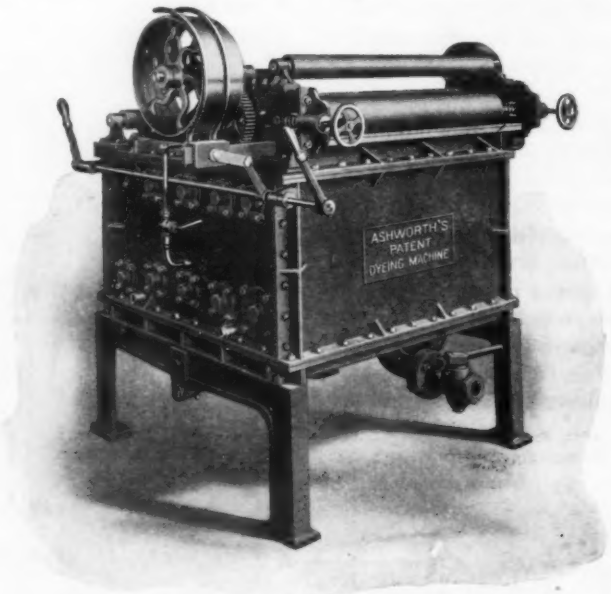
Weaving together yarns of artificial silk threads twisted with others of animal fiber to give the required elasticity in the warp and afterward destroying the animal fiber throughout the fabric.

Weaving together weft threads and yarns of artificial silk threads twisted with woolen threads and afterward destroying the woolen threads throughout the fabric.

In the manufacture of textile fabrics, weaving together yarns of artificial silk threads twisted with others of animal fiber and cotton yarns and afterward destroying the animal fiber throughout the fabric.

THE ASHWORTH PATENT DYEING MACHINE

This machine, the invention of A. Ashworth, has been built for a number of years by the English firm of J. H. Riley & Co., Ltd., Bury, England, and it has demonstrated its advantages in a number of the leading dye works. The Textile Finishing Machinery Co., Providence, R. I., has secured the American rights and have already



THE ASHWORTH PATENT DYEING MACHINE.

built and installed in American mills a number of the machines.

The dyeing of indigo on piece goods and warps has hitherto been conducted in vats open at the surface, thus exposing the reduced indigo to constant surface oxidation, which has meant an increased cost in the working of the vat through more frequent springing being required. Another drawback in the existing method has been the unevenness of the shade produced and also loss of coloring matter, through the fabrics on leaving the vat taking up a large percentage of oxidized indigo from the surface in the form of "flurry," which never combines with the fabric and has subsequently to be washed

off to obtain even shades. This feature has meant considerable loss of coloring matter. With the Ashworth dyeing machine these inconveniences and losses are eliminated, and much more satisfactory results are obtained, not only in indigo dyeing, but in the newer type of vat colors, such as thio indigo, indanthrenes, etc., where the advantages are still more pronounced. Especially is this the case as regards "flurry," as the "flurry" resultant from the new vat colors becomes fixed to the fabrics and will not wash off, as indigo does, thus producing shades of permanent irregularity which no subsequent washing and clearing can eliminate.

The features of this patent dyeing machine are the use of an enclosed bath, exposing only a fractional part of the surface of the vat to the action of the atmosphere, thereby reducing oxidation to a minimum. Within the enclosed bath or vat, are provided a pair of saturation rollers to secure complete penetration of the fabric at its entrance. The subsequent carrying rollers permit of the complete saturation of the cloth prior to its exit, where it is finally nipped by parallel rollers, the liquor falling back into the vat and washing any "flurry" from the fabric by gravitation, thus obtaining perfectly even shades without loss of coloring matter.

Wherever stable hydro-sulphite is employed as a reducing agent, the vat can be set with varying strengths of coloring matter, and shades of great density can be obtained with the minimum amount of passages through the vat, thus obtaining the greatest possible production with the minimum number of vats. In cases where the cloth can be passed into the vats in a damp condition, the vat can be hermetically sealed by filling the entrance and exits ducts with paraffin oil, which is never taken up by the cloth or the coloring matter. A steam coil is arranged for heating purposes, and also a mechanically driven agitator for use when starting the vat, cleaning out, or raking up purposes. The vat can be fed beneath the surface of the liquor with fresh coloring matter, pro rata, to the amount being absorbed by the goods during the passage through the vat, and a constant level of dye liquor maintained.

THE BLEACHING OF HALF SILK WITH PEROXIDE OF SODIUM

BY GRANICUS

The bleaching of mixtures of cotton and silk presented special difficulties. Half silk cannot be successfully bleached with chlorine compounds, because of their action on the silk. On the other hand, sulphur compounds cannot be used, as the sulphurous acid retained in the fiber will oxidize to sulphuric acid and tend to carbonize the cotton.

Bleaching with peroxide of sodium is an oxidizing process. The natural coloring matter receives an additional amount of oxygen and forms a white soluble compound, which is removed by subsequently rinsing the goods. If water acidulated with sulphuric acid is neutralized with sodium peroxide, hydrogen peroxide is formed and glauber salts remains in solution. If an alkali is added, the hydrogen peroxide in contact with the fiber will decompose into water and active oxygen, which oxidizes the natural coloring matter to a white soluble compound. When bleaching half-silk the goods should first be boiled out with a soap free from caustic. A concentrated bleaching solution should be used. If the solution is too weak the bleaching process will be too slow and the silk may as a result be of a yellow or brown shade. The inside of the bleaching vat should be covered with canvas, as the wood, especially near knots, has a tendering action on the cotton. It is necessary to prevent any metal from getting into the bath. Lead or any other metal pipes should be avoided. If the steam is free from iron the bath may be heated by a rubber hose with direct steam. If lead pipes are used to heat the bath, the liberated oxygen will combine with some of the lead to form lead peroxide, which is readily absorbed by the silk, giving it a yellow shade.

The required quantity of sulphuric acid is added to enough water to cover the goods without crowding. Then sodium peroxide is added under constant stirring until the bath shows a neutral reaction with litmus paper,

The bath is then heated to 140° F. Just before the goods are entered the bath is made slightly alkaline, preferably with sodium silicate. As soon as the goods are a good white, they must be taken out of the bath and rinsed several times to remove the glauber salts and the natural coloring matter that has been oxidized. If the goods are left in the bath too long the silk will turn yellow. As bleaching with peroxide of sodium is an oxidizing process, the goods will not turn yellow after a white has been obtained, because the oxidized coloring matter has been removed by the subsequent rinsing.

HINTS ON DYEING

BY TECHNICUS

(The Dyer and Calico Printer)

Take the question of small lots. Suppose a dyer has machines of the respective capacities, of 100, 200, 300, 500, 1,000 lbs. In slack times orders dwindle in weight per shade. The number of small lots increases enormously; the number of large ones declines. The 100-lb. lots spread into the 200-lb. machines—the 200-lb. lots are relegated to the 300-lb. machines, and the 300-lb. lots are done in the 500-lb. machines, and the 1,000-lb. machines are probably only half occupied. All the machines are thus working below their capacity, which is bad in every way.

It is not the case that where a machine can do a lot it can also do a little. There is a proper weight where all conditions are at their best. Consider the proportion of material to liquor. If the dyer attempts to put too much material into a dye vat the shade will be uneven. The wool exhausts the color too quickly, or, to put it another way, the color rushes on to the wool in a headlong manner instead of uniformly. Before the liquor had penetrated to all parts the color is taken out of it and hence the final result is light and dark patches.

Suppose too little wool is put into the machine. The speed of exhaustion is much reduced. In order to bring all parts of the material into contact with all parts of the liquor there must be excess of motion either of the material or the liquor, and even then with many colors exhaustion would be very imperfect. Matching to shade by successive stuffings is then made difficult by the fact that the unexhausted color cannot be calculated.

With a small lot the water in the vessel is actually more than when a proper weight is put in, because the place of the textile material is occupied by liquor. Steam, therefore, also becomes absolutely more and relatively much more. Labor is no less, and it can therefore be seen how quickly the dyer's relative remuneration drops when his machines are not properly filled. And as for trouble—what a contrast between one 1,000-lb. lot and ten 100-lb. lots. Each small lot is actually more trouble than the larger lot because operations like weighing out dyestuffs are necessarily more delicate and the judgment of quantities requires more discrimination. Suppose the workman makes a mistake of 5 lbs. in weighing the wool. It is a serious mistake with a 100-lb lot, but of little consequence with 1,000 lb.

The small lot evil is very largely a consequence of the rage for patterns and samples, and everybody will agree that the multiplication of these does not bring commensurate benefit. It is not only the buyer who grumbles about them. All branches of the textile trade tell the same tale and all continue to turn them out. It is expense and worry to make them. It is weariness to look at them. Out of every hundred samples the dyer sends out, perhaps only two or three do any good, and the merchant receives the manufacturer's patterns often with a sigh, yet like the housewife's spring fever there is a periodical craze for new samples and patterns. As far as color in solid shades is concerned the whole practical gamut has been gone through dozens of times, yet year after year, perhaps every half-year, some firms want the whole gamut repeated. Instead of keeping all, they choose a few and throw the others on one side. It is on points like this that large trusts or combinations of firms score. A combine of a dozen firms only needs the gamut once and it is easy to share it out so that each branch has a large, comprehensive and yet distinct assortment. On

the next occasion there is simply a shuffling of the assortments. Twelve independent firms would require the gamut twelve times over every time, and on each occasion the resultant choice might show missings in the whole lot of them.

Numerous standards must perforce result in smaller weights to each standard, but there is another reason why weights are kept down. The merchant or manufacturer tries to work hand to mouth. He does not risk a large stock. In effect he tries to make the dyer's skill save his capital charges, yet the saving in expense would generally pay handsome interest on the extra capital, for the dyer needs more plant and capital, and the cost of dyeing increases, so that this hand-to-mouth style is only pettifogging and its saving illusory. Larger lots, smaller prices; more trade, more profit. Small lots, higher prices; less trade, less profit.

Perhaps in the slubbing branch of the dyeing trade is there the greatest chance for collaboration, and in the contrariness of things this is perhaps the branch where there is least of it. Firms who dye their own have a great advantage here because they can and do adopt the obvious chances of cheapening and expediting the dyeing. Needless to say, a firm which dyes its own will for a start put correct amounts of wool into the machines. Dyeing of 100-lb. lots in 200-lb. machines would be anathema. It is in the matching-off, however, that the greatest saving can be attained. Slubbing will not stand vigorous working in dye liquors and with alizarine colors it is very rarely level. It is almost impossible to get perfectly correct samples or draws out of the boiling liquor. When the wool has come out of the machine it can be handled better, but sometimes even then no one could guarantee the shade that the whole would come up to. Drabs and sages dyed with Anthracene Brown and Alizarine Cyanine Green are great sinners in this respect. If the first stuffing has been short of brown the addition is pretty certain to go on patchy. What is to be done? Within fairly large limits different shades of slubbing will in the subsequent gilling and combing mix to a solid shade. A lot has to be very uneven indeed if gilling-up does not make it solid. It will be perhaps well to explain that gilling is the next process after dyeing. An ordinary man would describe this as combing, but in the trade it is the next process again which receives the term. Gilling is a simple combing for the purpose of straightening the fibers. Combing is a more intricate business. There is truly a further straightening and paralleling, but its essentialness is a separating of the long fibers from the short. It is generally followed by another gilling.

To revert to the dyed slubbing. What does the manufacturer who dyes his own slubbing or the firm which has realized the advantages of collaboration do? They have it put through the gilling straight away. It is progressing towards the finished article, but it also now tells exactly what its shade is. Suppose it is a 500-lb. lot of navy blue and it turns up a trifle dark, 125 lbs. will be dyed at once, care being taken to keep this on the light side. This will be gilled and a few trial mixings, which cost next to nothing, will show what proportion will be needed. Perhaps 110 lbs. of the 125 lbs. will be sufficient to get the correct shade, or perhaps the 125 lbs. will only pull up 475 lbs. of the 500 lbs. It may even be that the tone cannot be got properly exact in any proportion. The 125 lbs. may be light enough, but not red or blue enough, in which case a third lot will require dyeing. Now note that each lot has been dyed at the quickest and cheapest rate. The slubbing has been handled least and is in better condition than if it had been cobbled. This is better than altering say a fourth of the first lot.

Another course is for the customer to demand a draw of a few ounces of sample bits pulled or drawn from the bulk. He spins these few ounces and knits against some standard yarn. If not correct, the dyer must alter same, say a fourth or a third, and the rigmarole is repeated several times. Time, steam, and labor are wasted, and tempers probably lost. This style of firm takes up an attitude and says: "We want a certain amount of dyeing: we tell you at the begin-

ning, and it is for you to arrange your work accordingly. If you want some wool in reserve to pull up to the shade with, well, leave it out at the beginning. If we want 1,000 lbs. why should we order 800 lbs. at first and keep 200 lbs. back? You ask for large weights one time, and practically ask us to reduce them at another, which is absurd. It is your business to dye things on shade. Don't ask us to help you with your trade. We have enough to do to attend to our own."

It sounds logical enough, but in practice works out badly. The essential points of difference between the two classes of customers are that one is willing to cooperate, the other is not; one recognizes that infallibility in regard to matching cannot be obtained, the other expects perfection. One firm is willing to carry stock, the other expects exact matching to an exact weight also. The reasonable customer's work is undertaken with confidence, it gets round quickly, and is a pleasure to be engaged upon. The awkward customer makes everybody nervous, and although far more care and pains are spent on him, there are far more mishaps with his work.

Another technical point to bear in mind is this: when the dyer has to do all the getting-on shade, it is cheapest for him to use the more expensive alizarines rather than the less expensive after-chrome dyes. The difference in dyeing a navy with alizarine blues on chrome and equally fast after-chrome navies is at least one penny per pound and in some cases twopence. The former require two baths, the latter only one, but when the latter are chromed off, further additions to the dye bath are practically prohibited, except those of inferior dyestuffs. The chrome in the bath would precipitate the fast chrome colors, and acid dyestuffs which are of second-class fastness to light and milling are to be used. The alizarine dye bath has no chrome in it, and continual additions can be made, so that, though costlier to start with, it is cheaper in the end for the awkward firm's work. The one-bath is 50 per cent. cheaper in labor and steam than the two-bath. The after-chrome colors are from 25 to 50 per cent. cheaper than the alizarines, but only where the gill-box is used in collaboration with the dye vessel are these advantages fully made use of; that is for small lots, with large lots one holeful can fill another up and the dyer does not need the gilling to help him. The after-chrome blacks, such as Diamond Black and Erio Black are of this type and have almost ousted logwood and alizarines because they are cheaper and cleaner. This last is a further good quality of the after-chrome colors. They are beautifully clean and loose wool dyed with them spins far better than two-bath dyed stuff.

While coal is still high in price the saving of separate mordanting baths is an item. The coal bill may easily be 10 per cent. of the dyer's expenses, to say nothing of the extra labor and the reduction in output entailed by every extra process. Yes; if the public dyer and firms who employ him have to compete successfully with the firms who dye their own, they must collaborate better. There are many advantages in separate establishments and division of the trade. There is more keenness in each department. If two individual firms collaborate they can as a rule beat the firm which runs two processes, because the latter firms' principals are probably only skilled in one branch and have to run the other with hired foremen; but if the two individual firms do not collaborate, then the compound firm will have a great advantage.

The total Sea Island cotton crop for 1910-11 is given as 87,911 bales, being 8,807 bales smaller than the crop of 1909-10. South Carolina produced 13,416 bags, a decrease compared with last season of 1,176 bags; Georgia, 45,646 bales, a decrease of 7,769 bales; and Florida, 28,849 bales, an increase of 138 bales. The amount exported was 84,060 bales, or 13,111 bales less than in the previous season. Great Britain accounted for 16,505, a decrease of 7,778 bales; the Continent, 6,430, an increase of 1,285 bales; and American mills, 61,125, a decrease of 6,618 bales.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 97

BLUE ON WORSTED PIECE GOODS CONTAINING WHITE SILK THREAD EFFECTS

Alizarine Blue on 100 lbs. worsted piece goods containing white silk effect threads. Prepare dye bath with

4 lbs. Alizarine Blue R.
(American Dyewood Co., 80 Maiden Lane, New York, N. Y.)
4 lbs. Ammonia 26° Tw.

Enter goods lukewarm, bring quickly to a boil, add 6 lbs. acetic acid, boil 30 minutes, add 6 lbs. more of acetic acid and boil another 1/2 hour. If color has not exhausted at the end of this time exhaust with a further 4 lbs. of acetic acid. After exhausting the bath add 1/2 as much chrome as color and continue the boil a further 3/4 hour.

Alizarine Blue R is a level dyeing product distinguished by extreme fastness to light and the ability to color worsted goods with silk stripes, leaving the silk white.

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Recipe No. 98

BROWN ON WORSTED PIECE GOODS CONTAINING WHITE SILK THREAD EFFECTS

Alizarine Brown S D G on 100 lbs. worsted piece goods with white silk effect threads. Prepare dye bath with

2½ lbs. Alizarine Brown S D G Extra.
(American Dyewood Co., 80 Maiden Lane, New York, N. Y.)
4 lbs. Ammonia 26° Tw.

Enter goods lukewarm, bring quickly to a boil, add 6 lbs. acetic acid, boil 30 minutes, add 6 lbs. more of acetic acid and boil another 1/2 hour. If color has not exhausted at the end of this time exhaust with a further 4 lbs. of acetic acid. After exhausting the bath add 1/2 as much chrome as color and continue the boil a further 3/4 hour.

Alizarine Brown S D G Extra is a level dyeing product distinguished by extreme fastness to light and the ability to color worsted goods with silk stripes, leaving the silk white.

Recipe No. 99

BLUE ON WORSTED YARN

Azo Fast Blue B R on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Azo Fast Blue B R.
(Cassella Color Co., 182 Front St., New York, N. Y.)
10 lbs. Glauber's Salt
5 lbs. Sulphuric Acid.

Enter at 130° F., and dye at a boil for one hour.

Azo Fast Blue B R possesses good fastness to light, alkalies, carbonizing and steaming.

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Recipe No. 100

BLUE ON COTTON YARN

Sulphur Blue B D Extra on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Sulphur Blue B D Extra.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
10 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
50 lbs. Glauber's Salt.

First add the soda ash, bringing the bath to dyeing temperature of 140° F., then add the dyestuff already dissolved in sodium sulphide, and finally add the Glauber's salt, which has been previously dissolved. The material is then dyed for one hour at 140° F. Only 7 per cent. of dyestuff is required to produce this shade in a standing bath.

Sulphur Blue B D Extra possesses good fastness to light and weather, alkalies, washing, and acid, and will be found useful for the production of very dark blues.

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Recipe No. 101

BLUE ON WORSTED YARN

Helindone Blue 3 G Powder Pat. on 100 lbs. worsted yarn. Prepare the dye bath with

10 lbs. Helindone Blue 3 G Powder Pat.
(H. A. Metz & Co., 122 Hudson St., New York, N. Y.)
2¼ lbs. Caustic Soda 40° Be.
1 lb. Helindoil.
1 lb. Hydrosulphite M L B Conc. Powder.
4 gals. Water at 120°-140° F.

Mix and allow to stand for 20 minutes at 140° F., when complete reduction will be shown by the yellow brown color of the liquor.

The dye bath is made up as follows for 750 gallons of liquor:

3 lbs. Glue, previously dissolved.
3 lbs. Soda Ash.
3 lbs. Helindoil.

10-15 ozs. Hydrosulphite M L B Conc. Powder, and after stirring a sample of the liquor should give a positive reaction with phenol phthalein. The required amount of stock dye liquor should then be added, the amount indicated above being sufficient for a 10 per cent. dyeing on 100 lbs. material.

The dyeing is carried out at a temperature of 150° F., for twenty to thirty minutes. The material is then squeezed, exposed to the air for one to two hours, and then scoured in a boiling bath for 20 to 30 minutes, made up with

3 lbs. Sulphuric Acid, or
5 lbs. Acetic Acid

per hundred pounds of material.

Helindone Blue 3 G Powder Pat. is particularly suited for the dyeing of both wool and silk and gives bright greenish blue shades of excellent fastness.

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Recipe No. 102

BLUE ON COTTON YARN

Sulphur Blue V Extra on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Sulphur Blue V Extra.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
10 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
50 lbs. Glauber's Salt.

First add the soda ash, bringing the bath to dyeing temperature of 140° F., then add the dyestuff already dissolved in sodium sulphide, and finally add the Glauber's salt which has been previously dissolved. The material is then dyed for one hour at 140° F. Only 7 per cent. of dyestuff is required to produce this shade in a standing bath.

Sulphur Blue V Extra possesses good fastness to light and weather, alkalies, washing, and acid, and will be found useful for the production of very dark blue shades.

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Recipe No. 103

BROWN ON COTTON YARN

Thioxine Brown G 2 R O O O on 100 lbs. cotton yarn. Prepare the dye bath with

15 lbs. Thioxine Brown G 2 R O O O.
(Geisenheimer & Co., 189 Front St., New York, N. Y.)
15 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
50 lbs. Glauber's Salt.

Dye at a boiling temperature for one hour.

Thioxine Brown G 2 R O O O possesses good fastness to washing, acids, alkalies, and cross-dyeing.

Recipe No. 104

BLACK ON COTTON YARN

Sulphur Black A W L Extra on 100 lbs. cotton yarn. Prepare the dye bath with

8 lbs. Sulphur Black A W L Extra.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
16 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
60 lbs. Glauber's Salt.

First add the soda ash, bringing the bath to boil, then add dyestuff already dissolved in sodium sulphide, and finally add the Glauber's salt. Bring bath to boil, and dye material at a gentle boil for one hour.

After hydroextracting, allow to stand in the air for several hours, whereby the greenish black oxidizes to a bluish black.

Sulphur Black A W L Extra possesses excellent solubility and filters clear of residue, consequently it is of value in machine dyeing.

—:—

Recipe No. 105

BLACK ON COTTON YARN

Diamine Aldehyde Black B Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs Diamine Aldehyde Black B Conc.
(Cassella Color Co., 182 Front St., New York, N. Y.)
2 lbs. Soda Ash.
20 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for one hour. The goods are then rinsed, and then washed at 160°-175° F., in a bath containing 3 per cent. formaldehyde (calculated on the weight of goods). Finally they are rinsed once more.

Diamine Aldehyde Black B Conc., particularly when aftertreated with formaldehyde, possesses very good fastness to light and washing.

—:—

Recipe No. 106

BROWN ON WORSTED YARN

Neptune Brown R X on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Neptune Brown R X.
(Badische Co., 86 Federal St., Boston, Mass.)
3 lbs. Sulphuric Acid.
20 lbs. Glauber's Salt.

Enter at 150° F., and dye at a boil for one hour.

Neptune Brown R X possesses good solubility, is level dyeing, and will be found to be a good color for the dyeing of compound shades where ordinary requirements only are necessary.

Recipe No. 107

SCARLET ON COTTON YARN

Thio Indigo Scarlet G Paste on 100 lbs. cotton yarn. Prepare the dye bath with

20 lbs. Thio Indigo Scarlet G Paste.
(Kalle & Co., 530 Canal St., New York, N. Y.)
5 lbs. Caustic Soda.
5 lbs. Hydrosulphite Conc. Powder.

Reduce at 140° F., and dye at a temperature of 105° F.

The reduced liquor is of a straw yellow color.

Thio Indigo Scarlet G Paste possesses excellent fastness to all of the common color destroying agencies.

Recipe No. 108

BROWN ON COTTON YARN

Thioxine Brown 3 B V O on 100 lbs. cotton yarn. Prepare the dye bath with

15 lbs. Thioxine Brown 3 B V O.
(Geisenheimer & Co., 189 Front St., New York, N. Y.)
15 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
50 lbs. Glauber's Salt.

Dye at a boiling temperature for one hour.

Thioxine Brown 3 B V O possesses good fastness to washing, acids, alkalies, and cross-dyeing.

Recipe No. 109

PINK ON BLEACHED COTTON YARN

Scarlet Salt 2 G Paste on 100 lbs. bleached cotton yarn. Prepare the dye bath with

1 lb. Scarlet Salt 2 G Paste.
(Kalle & Co., 530 Canal St., New York, N. Y.)
6 ozs. Caustic Soda.
6 ozs. Hydrosulphite Conc. Powder.

These are reduced at 140° F., reduction being indicated by purple color of solution.

The dyeing is carried out at a temperature between 90°-100° F., for 1/2 hour, and then aftertreated in a boiling soap bath for 1/2 hour.

Scarlet Salt 2 G Paste possesses excellent fastness to all color destroying agencies.

Recipe No. 110

GARNET ON COTTON YARN

Para Garnet B on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Para Garnet B.
(Farbenfabriken Co., 117 Hudson St., New York, N. Y.)
25 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour. Then rinse in cold water, and couple with paranitraniline in a cold bath made up as follows:

1 lb. Para Nitraniline.
2¼ lbs. Hydrochloric Acid Conc.
2 gals. Water.

When the hydrochloric acid has thoroughly reacted with the para nitraniline this mixture is stirred well with

4 gals. Water,

and when thoroughly cold

¾ lb. Sodium Nitrite,

previously dissolved in cold water is added

When ready for use add

¼ lb. Sodium Acetate,
½ lb. Sodium Carbonate,

dissolved in water.

Para Garnet B possesses good fastness to washing, and may be discharged with Rongalite C. Its fastness to light is also fairly good.

Recipe No. 111

BLUE ON WORSTED YARN

Brilliant Patent Blue A on 100 lbs. worsted yarn. Prepare the dye bath with

1½ lbs. Brilliant Patent Blue A.
(H. A. Metz & Co., 122 Hudson St., New York, N. Y.)
20 lbs. Glauber's Salt.
5 lbs. Sulphuric Acid.

Enter at 140° F., and dye at a boil for one hour.

Brilliant Patent Blue A can be used for all classes of woolen and worsted material where great brilliancy of shade is of interest. It can be dyed on a chrome mordant or aftertreated with bichromate giving shades of good fastness to milling.

Recipe No. 112

SCARLET ON COTTON YARN

Thio Indigo Scarlet R Paste on 100 lbs. cotton yarn. Prepare the dye bath with

30 lbs. Thio Indigo Scarlet R Paste.
(Kalle & Co., 530 Canal St., New York, N. Y.)
7½ lbs. Caustic Soda.
7½ lbs. Hydrosulphite Conc. Powder.

Reduction is carried out at 140° F., and will be indicated by a straw-yellow color of the liquor. The dyeing is done at ordinary temperature for 1/2 hour, and then aftertreated for 1/2 hour in a boiling soap bath. This color possesses excellent fastness to light, but its fastness to washing and rubbing is not satisfactory. It also possesses good fastness to chlorine.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

A Dyeing Machine. The Textile Finishing Machinery Co., Providence, R. I. A dyeing machine for indigo and similar colors. A description appears in this issue.

Duplex Carding Device. The H. & B. American Machine Co., Pawtucket, R. I., have recently brought out an attachment to revolving flat cards for removing short fiber, motes, leaf and other foreign substances from the cotton before it reaches the cylinder. A description appears in this issue.

Flexible Coupling. Charles Bond & Co., 520 Arch St., Philadelphia, Pa. The Grundy flexible coupling, a description of which appears in this issue.

Cotton Waste Card. The Saco-Pettee Co., Newton Upper Falls, Mass., have recently brought out an improved card for working cotton waste. A description appears in this issue.

Tension Guide for Skein Winders. Jacob K. Altemus, 2824 North 4th St., Philadelphia, Pa. An improved tension guide for the Altemus shuttle bobbin skein winder. A description of the machine appears in this issue.

Electric Feed for Tentering Machines. A. Mountforts, Gladbach, Germany. An automatic feed for tentering machines, which is operated by electricity. L. H. A. Schwartz & Co., 40 Central St., Boston, Mass., are the American agents and have a feed on exhibition at their office where anyone interested can inspect it.

Fulling Mill. Paul Klug, Crimmitschau, Germany. A fulling mill with two sets of rolls, which is said to be capable of a large production. L. H. A. Schwartz & Co., 40 Central St., Boston, Mass., are the American agents.

Jacquard Device. The Maschinenfabrik Kappel, Chemnitz-Kappel, Germany. A hinge device for connecting the cards on a jacquard loom.

Ring Frame Driving Motion. Berlin-Anhaltische Maschinenbau-Act.-Ges., Berlin, Germany. A driving motion which enables the speed of ring frames to be varied during the spinning process and thus prevent breaking of the yarn.

Self Feed for Cards. The Firma Liebscher, Chemnitz, Germany. An improved self feed for first breaker cards. It has been developed by C. Oswald Liebscher, superintendent of the works, and is recommended for uniformity of the feed.

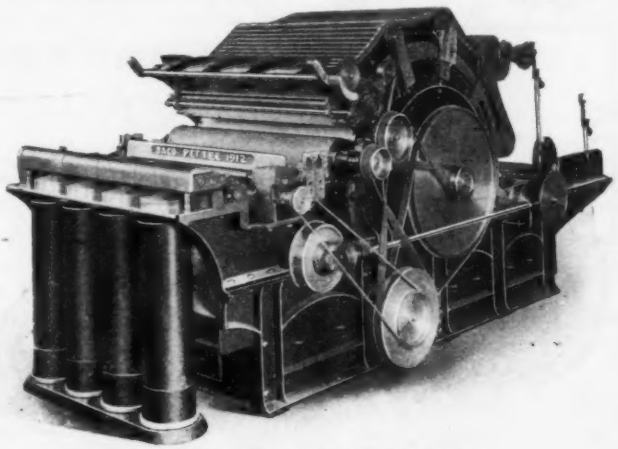
Scouring Machines. F. W. Dischreit, Plauen, Germany. Open width scouring machine for very light goods, such as mulle, batiste, etc.

Printing Machine. Paul Pollrich, Duesseldorf, Germany. An improved printing machine for textile fabrics. It is equipped with an attachment for preventing all dust dirt and other foreign substances from collecting on the cloth.

Finishing Machine. Fr. Gebauer Maschinenfabrik, Berlin, Germany. An improved machine for finishing goods to produce a high luster with the wet finishing process.

THE SACO-PETTEE CARD FOR COTTON WASTE

The Saco-Pettee Co., Newton Upper Falls, Mass., have recently placed on the market an improved card which marks an important advance in the method of working cotton waste. The card is used in connection with the double carding process and is adapted for all waste that will make a sliver strong enough to hold together. After the first carding by the ordinary method the sliver is wound with 42 ends on a roll. Four of these rolls are then set at the feed end of the second card, which is of the ordinary top flat type, and the 168 slivers delivered to the machine. A fancy set above the doffer enables the stock to be well stripped from the cylinder. The web, as it leaves the doffer, is divided into four equal sections by means of short steel ribbons placed between the cylinder and doffer. The four quarter sections of the web are condensed separately and deposited each into one of four coiler cans connected with the card. By this arrangement forty-two of the slivers from the first card are doubled to make one sliver from the second machine. This doubling results in very uniform work. Tests of the product from this card were recently made, and it was found that the weight of a 23-grain sliver did not vary over 1 grain during a long run. This uniformity makes it possible for the card sliver to be taken direct to the intermediate frame, skipping the drawing frame and large slubbers. The use of the fancy for raising the stock from the cylinder enables the card to be run a week without cleaning. The improved card is now being installed in several of the most progressive cotton mills in the country, and the builders are confident that on any waste stock strong enough to hold together in a sliver it will turn out better work and a much larger production at a lower cost than is possible by methods heretofore in use.



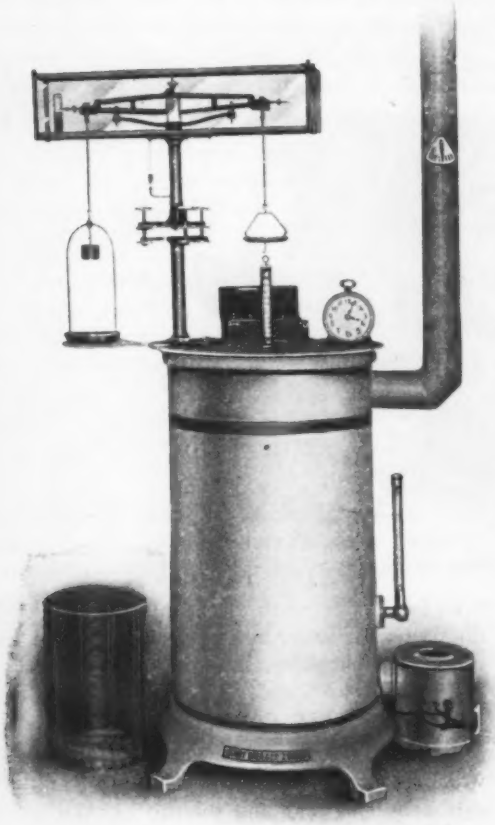
THE SACO-PETTEE COTTON WASTE CARD.

AN ELECTRIC CONDITIONING OVEN

The conditioning of textile materials, which has for many years been firmly established in England and on the Continent, is rapidly winning its way into American mills. It is simply the establishment of a basis on which both seller and buyer can do business without one of the parties gaining an unfair advantage over the other. It is as necessary as is a correct scale or yard-stick, or asking for the right change when offering a bill or coin in payment for an article. An improved conditioning apparatus, heated by electricity and offering important advantages, is offered to the trade by Alfred Suter, 5th Avenue Bldg., New York. This machine, which is shown in the illustration, is built by Henry Baer & Co., Zurich, Switzerland, who have a high reputation for their testing machines and instruments.

In the Baer electric conditioning oven, the air is forcibly propelled by an electrically driven fan through the material to be tested. The heat is also reduced by electricity by means of coils of a special wire, so arranged in the electric switch-board allow the operator to regulate the heat to a nicety.

All the moisture contained in the material is forced through the small chimney which is provided for that purpose. The forced draft dries the material, not only more quickly, but more thoroughly than was possible with the old type conditioning oven, in which the air, heated by gas or steam, circulated through the material by natural draft.



THE ELECTRIC COMBINATION OVEN.

that all the warm air must pass through the material in the drying chamber. The fan is shown at the right of the oven near the bottom, the motor being enclosed in the same casing. At the left is shown the wire basket into which the raw material, yarn or cloth which is to be tested for moisture content is placed. The oven is supplied with a very accurate scale inclosed in a glass and metal case, and having a capacity up to one pound. A thermometer indicates the temperature in the drying chamber and a series of contacts

THE GRUNDY FLEXIBLE COUPLING

This coupling, manufactured by the Charles Bond Co., 520 Arch St., Philadelphia, Pa., is a simple and effective device for connecting shafting where it is difficult to get the bearings in perfect alignment or where they are liable to get out of adjustment. The coupling consists of a central disc made of specially selected leather or hard fiber with lugs cemented and riveted to each side. These lugs serve to transmit the power to the outside flanges. The leather lugs are cut on a bias, tapering towards the disc, the driving flanges being machined with a corresponding taper. This has a tendency to draw the flanges close to the disc, and to cause the leather lugs to receive and transmit the power at the strongest points. The close connection made possible by this style of flange, reduces to a minimum

the objectionable leverage. The driving disc being made of nonconducting material acts as an insulator. The coupling can be fastened to the shaft by set screws or keys as desired, and is constructed so that there are no dangerous projections.

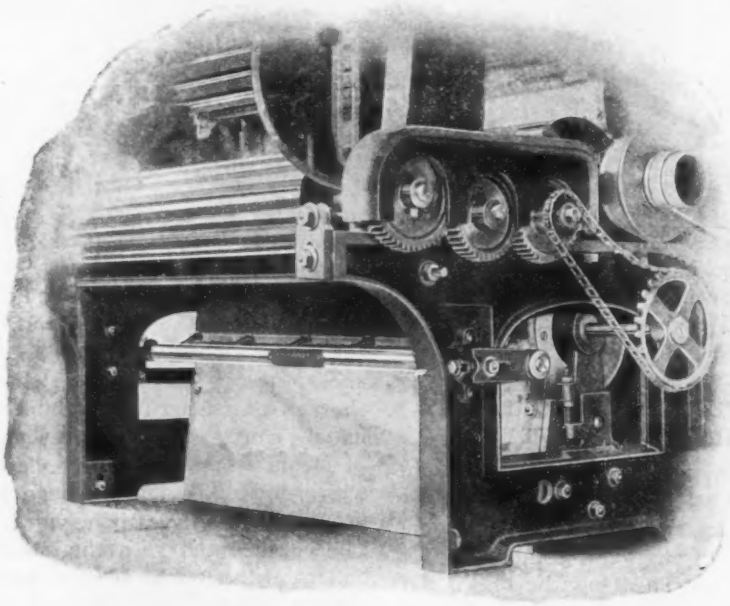
Among the claims made by the manufacturers for the Grundy coupling are the following: Will transmit more horse power than any other coupling or equil diameter. Uneven strains are taken care of. While maintaining a positive and silent drive it is

free from the objectionable hammer action features. Is perfectly balanced, and adapted for revolving at high speeds. Can be run in either direction; is close connected; easy of access; indestructible; with practically no repairs. The coupling has been tested out under severe conditions; there are no loose cylinders, rings, threaded pins or bolts to give trouble.

This coupling can be used to advantage for connecting motors to pumps, sewing machines, machine tools, knitting machine, etc.

THE H. & B. DUPLEX CARDING DEVICE

The illustrations show an improved device for removing motes, short fiber, leaf and other foreign substances from cotton before it reaches the cylinder and flats on the cotton card. This device was invented by P. Hardman, Willimantic, Conn., and has been adopted by the H. & B. American Machine Co., Pawtucket, R. I., for their cotton card. The device consists of a roller, covered with special clothing, placed underneath the lickerin and revolving slowly in the same surface direction as the lickerin. A doffing comb is provided which removes from the duplex roll the substances eliminated by the roller from the cotton. The object of this invention is to remove the short fiber, motes, leaf and other foreign substances from the cotton before it reaches the cylinders and flats. Anyone possessing any knowledge of cotton will realize at once the great advantage obtained by removing the foreign matter, etc., before the cotton gets into the cylinders and flats. The results are that the quality of the carding is very much improved and naturally will produce a very much better quality of yarn. The life of the card clothing is increased, as it is not subjected to such rough usage as it would be if the substances removed from the duplex

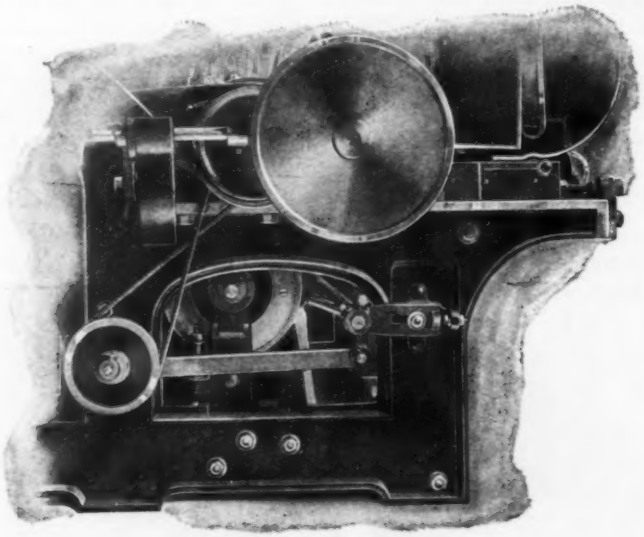


THE H. & B. DUPLEX CARDING DEVICE ATTACHED TO CARD.

device were allowed to pass into the cylinder and flats; but more important still is the fact that the clothing is always in much better condition to give superior carding, and requires, consequently, less grinding. Production is increased owing to the cleaner condition of the cylinder and flats. By this device, without altering the card settings, the amount of waste taken out may be varied

considerably, according to the class of cotton and quality of work desired.

The mechanism is simple in construction and very durable. It can be applied to any make of revolving flat card, the illustrations showing it applied to the H. & B. American Machine Co. 40 inch right hand card. The device can be seen in operation at the H. & B. American Machine Co.'s works at Pawtucket.



THE H. & B. DUPLEX CARDING DEVICE.

AN IMPROVED NON-RETURN SAFETY BOILER STOP VALVE

The great importance of non-return boiler stop valves for use on a battery of boilers is universally acknowledged, and in some countries their installation is compulsory. It is evident that should a tube be blown out or a fitting ruptured in one of the boilers of a battery, the steam from the other boilers would rush into the header and discharge into the disabled one. An ordinary stop valve would here be inadequate, as considerable time would necessarily be consumed in reaching and closing the valve, and a certain amount of danger must be anticipated. The non-return safety boiler stop valve shown in the illustration has been given very severe tests, and is in use in a large number of high pressure power plants, in all cases giving perfect satisfaction.

Fig. 1 shows this improved valve applied to a battery of boilers in the plant of The New York Rubber Company, Matteawan, N. Y. Fig. 2 is a vertical section of the valve parallel to the pipe; Fig. 3, a section at right angles of the pipe. Should an accident occur, such as the blowing out of a tube in the boiler or any rupture of the headers, shells, etc., permitting the steam to escape, the valve attached to that boiler will immediately close. This will prevent the escape of steam from the other boilers connected with it in battery, and the danger to life and property will be greatly lessened. The plant can be operated with the other boiler or boilers, without interference, preventing the closing of same and the loss of time and money. This valve will prevent steam from being turned into a boiler which has been cut out for cleaning or repairs, as it cannot be opened by hand when pressure is on the header side. It can, however, be closed when desired. The valve can be connected in either horizontal or vertical position.

A unique arrangement of outside spring and lever mechanism has been provided for the purpose of effecting a slight counterbal-

ancing effect to hold the valve open, this being necessary in order to counteract the influences within the valve or line which tend to actuate the disc with very slight fluctuation of pressure. These fluctuations, usually caused by the engine, are frequently met within steam lines, and unless some means, such as are shown in this construction, are applied for counteracting these pulsations, the disc will be kept in continual motion, and with the lack of lubrication within the dash-pot, rapid wear will soon take place, causing a clearance between the piston and the dash-pot. As the amount of clearance increases, the dash-pot becomes less effective and a chattering soon results, causing great damage to the internal parts of the valve. Where the fluctuations of pressure do not exist, and the flow of steam is steady, the use of the exterior spring and lever mechanism is not necessary. Hence, the valves are regularly furnished without tension on the spring, and the dash-pot arrangement can here be depended upon to cushion the movement of the disc.

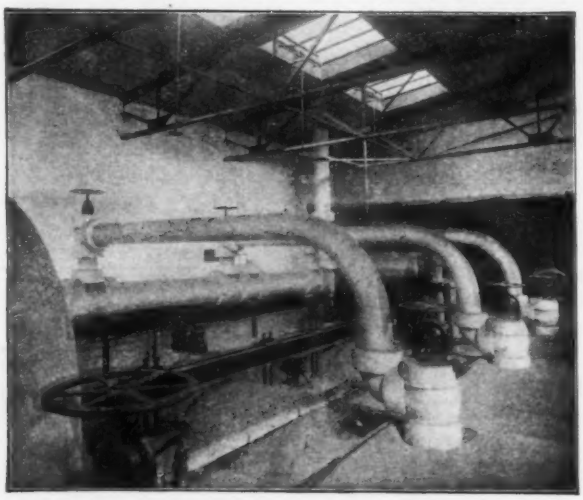


FIG. 1. THE LUNKENHEIMER STOP VALVE.

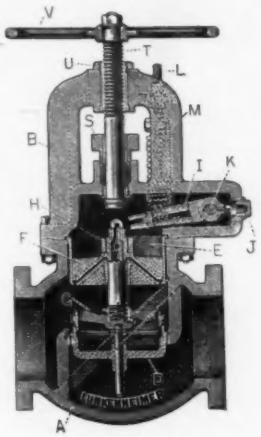


FIG. 2.

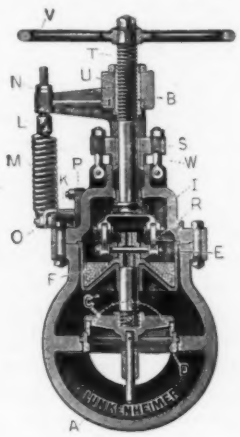


FIG. 3.

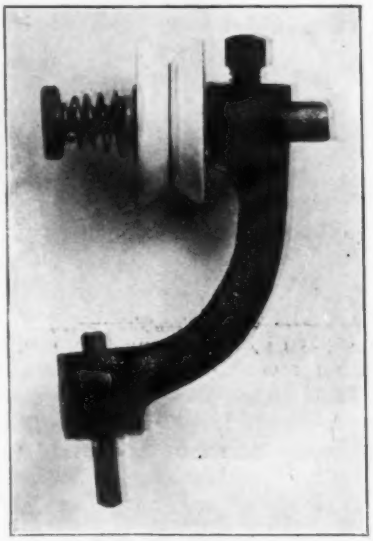
Should a pulsating condition develop, which can easily be detected by observing the movement of the spindle, L, the regu-

lating nuts, N, can be adjusted, gradually placing the spring under tension, until the rapid movement of the spindle, L, is stopped. This adjustment of the nuts tends to lift the disc from its seat as it places the spring under tension, causing it to pull upon the lever, O. This lever is keyed to the shaft, K, which enters the valve through the stuffing-box, P. Attached to the shaft, O, is the forked arm, I, to which are pivoted the links, R, which in turn are loosely connected to the piston, F. When the spring is under tension, the disc is raised from its seat and cannot close until the steam pressure above the disc exceeds that under it. This difference in pressure, which is governed by the tension of the spring, is never more than five pounds.

When the valve is properly set to overcome the tendency of pulsation, the disc remains practically in equilibrium until there is a reduction in pressure on the inlet side, when it will instantly close. Attention is called to the large bearing surface of the piston within the dash-pot. All parts of the valve subjected to wear are renewable. These include the disc and seat ring, though the seating faces of the disc and seat ring can be reground a number of times before it is necessary to renew these parts. The stuffing-box, through which the stem, T, travels, is of large size and entirely exposed to the cooling effects of the air. It can be packed under pressure when the stem is raised to its limit, as a shoulder on the bottom of the stem forms a seat against the bronze bushing in the bottom of the stuffing-box. The stem, T, operates in the bronze hub, U, in the top of the yoke and bronze bushings in the bland and stuffing-box, preventing corrosion and insuring easy operation. These valves are made in five different combinations of materials in order to suit the requirements of various conditions of superheat and high pressure, and also to meet the specifications of engineers who may differ as to what is best suited for the purpose. The Lunkenheimer Co., of Cincinnati, Ohio, are the manufacturers of these valves. They have issued an attractive booklet, which they are willing to send to anyone interested.

THE ALTEMUS TENSION GUIDE FOR SKEIN WINDER

The illustration shows the improved tension guide for the shuttle bobbin skein winder built by Jacob K. Altemus, 2824 North 4th St., Philadelphia, Pa. It is adapted for fine or coarse yarn. The guide enables a greater quantity of yarn to be wound on the bobbin while the close contact of the tension guide enables the strain on the yarn to be greatly reduced. The guides are applied to the casting by removing the wire and porcelain and inserting the



THE ALTEMUS TENSION GUIDE.

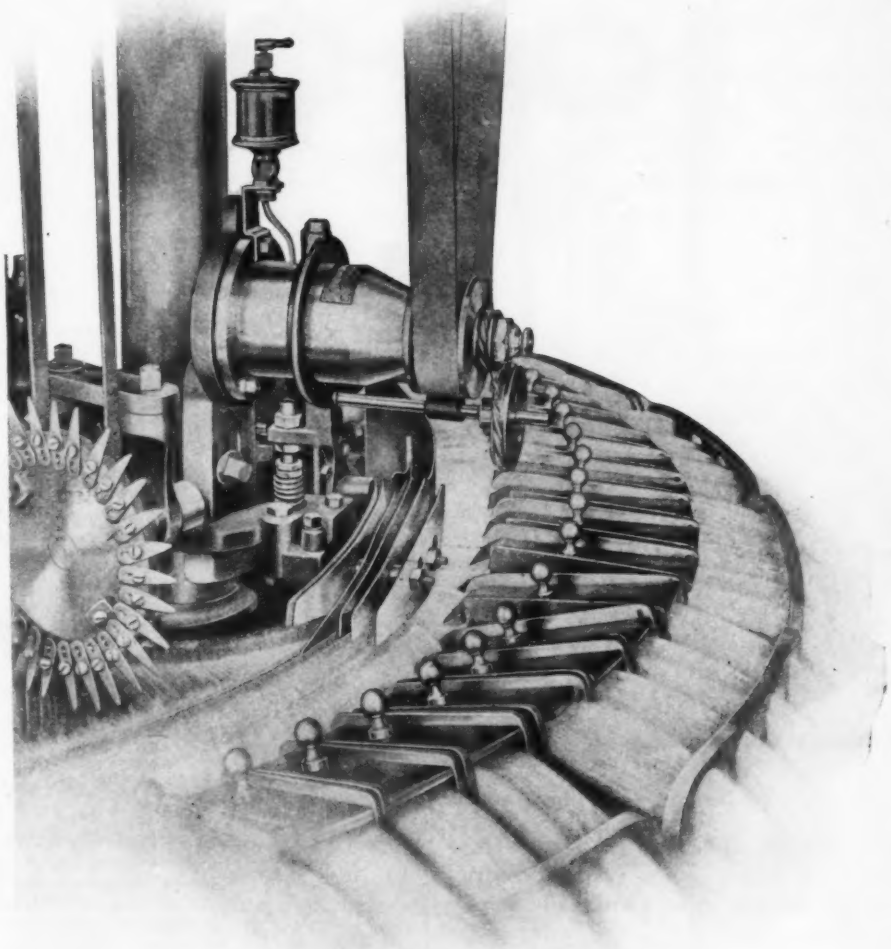
new casting with the proper attachment for tension. Equipped with this guide, evenly balanced swifts and improved rollers, the new Altemus winder turns off a very large production on either fine or coarse yarn.

Mr. Altemus also builds a special machine for winding worsted and linen yarn equipped with a variable speed motion and the improved tension guide, also embodying a number of other improvements designed to increase the production and improve the quality of the work.

The world's production of raw silk amounted to 52,481,036 pounds in 1911 as compared with 54,002,227 pounds in 1900.

THE GREENWOOD DABBING MOTIONS FOR NOBLE COMBS

The dabbing motions shown in the accompanying illustrations is an English invention which has been in successful operation in the Bradford district for over two years, where it has given excellent results in respect to both the quality of the work and economy in combing all classes of wool. The Tillotson Humidifier Co., Providence, R. I., have secured the sole right to manufacture this dabbing motion in the United States. The English manufacturers of the motion are Prince, Smith & Son, and Taylor, Wadsworth & Co., the well known builders of worsted machinery. As shown in the illustration, the motion consists of stationary plates set between the rows of pins so as to press the fibers down ready for the combing process as the circles revolve. The advan-



THE GREENWOOD DABBING MOTION.

tages claimed for this dabbing motion are summarized as follows:

1. The whole cost of brushes and brush repairs is avoided.

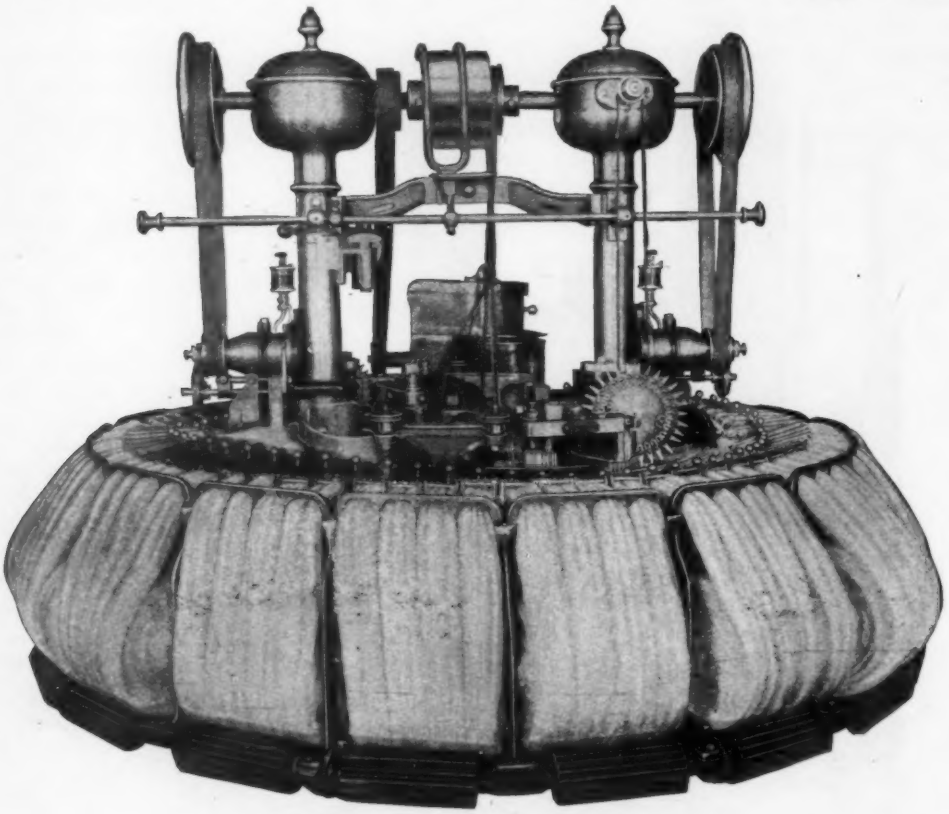
2. The dabber, once set, requires no adjustment until the circles are changed. This means a great saving of time compared with brushes, which have to be continually reset, as they wear down.

3. The sliver being more evenly pressed into the circles makes the drawing off easier, increasing the life of drawing leathers, with less risk of broken fibers or cut slivers, and the wool cannot ride over the pins.

4. Combs require less power to drive them, they can be run faster, vibration is much reduced, and production greatly increased, in some cases by 20 per cent.

5. Renewals and upkeeps are practically nil, and the capital is repaid in a few months by economies and increased production.

Some of the largest and most successful worsted mills in this country and England are using the Greenwood dabbing motions.



A NOBLE COMB WITH GREENWOOD DABBING MOTION.

New York, Newburg. The Newburg Bleachery will soon add to the power equipment of its plant new electrical apparatus consisting of a 185 k. v.-a. generator and a 9 1/2 k. w. exciter. The material will be furnished and installed by the General Electric Company.

Massachusetts, Lawrence. The Arlington Mills are about to install additional apparatus for motor drive consisting of eight small motors from 1 to 7 1/2 h. p. and four larger motors of 22, 35, 40 and 60 h. p. respectively. Orders for the motors have been placed with the General Electric Company.

Connecticut, Mystic. The Mystic Mfg. Co. will add to its equipment one 100 k. w. turbine, thirty-three 1 h. p. motors and switchboard. The apparatus will be supplied and installed by the General Electric Company.

Personals

William Heeney, superintendent of the Kinderhook Knitting Co., Kinderhook, N. Y., has severed his connection with that company.

O. W. Stites, formerly employed at the Knoxville Spinning Co., Knoxville, Tenn., has been appointed superintendent of the Holston Mfg. Co., Lenoir City, Tenn.

E. S. Cornell, superintendent of the Vancouver Knitting Co., Vancouver, B. C., Canada, has resigned to accept a similar position with the Leadlay Mfg. Co., Winnipeg, Manitoba, Canada.

Ernest Thorne has accepted the position as overseer of knitting at the Rock Run Mills, Goshen, Ind. He comes from Mohawk, N. Y.

C. E. Sweet, for a number of years superintendent of the Uncasville Mfg. Co., Uncasville, Conn., has severed his connection with that firm. The employes in the mill presented him with a beautiful solid gold 14 k. watch, chain and charm. The watch was suitably inscribed and the charm contained a diamond and monogram. J. C. Platt, on behalf of the operators, assured Mr. Sweet it was with regret that he was leaving their midst. The employes assembled at his home, where fine selections were rendered by Walden's Cornet Band. Mr. Sweet was visibly affected and thanked all for their kindness and assured his associates that he was leaving knowing he had their best wishes.

Joseph Butler, overseer of finishing at the Bellevue Mills, Clinton, Mass., has severed his connection with that company.

T. E. Rogers, overseer of dyeing at the E. E. Hilliard Co., Buckland, Conn., has severed his connection with that company.

Thomas J. Firth, agent of the Bigelow Carpet Co., Lowell, Mass., for the past fourteen months, has resigned his position with that company. He is succeeded by H. E. Wadely, who comes from Canada.

George Poors, overseer of weaving at the Allen Woolen Mills, Rochester, N. Y., for the past few years, has been promoted to the position of superintendent. The promotion was through the appreciation of his faithful work and strict attention to his duties while he has been in the employ of this company.

Harry Merson has been promoted to the position of overseer of dressing at the Oakland Mfg. Co., Reiserstown, Md. He was formerly dresser-tender at this company.

Stewart J. Smith, for the past five years agent of the Ray Mill, American Woolen Co., Franklin, Mass., has been promoted to the position of manager of the shoddy and waste department of the company with headquarters at the Boston office. He succeeds William Ollendorff.

F. S. Brown, formerly assistant superintendent at the Shetucket Co., Norwich, Conn., has resigned to accept the position as superintendent of the Warren Cotton Mill, West Warren, Mass.

Charles P. Learned, formerly superintendent of the Ray Mill, American Woolen Co., Franklin, Mass., has been appointed agent to succeed Stewart J. Smith.

Richard T. Mills, for a number of years overseer of ring and mule spinning, twisting and warping at the Montreal Cotton Co., Valleyfield, P. Q., Canada, was presented with a silver tea service by the help in his employ on his retirement. The presentation was made by Miss Caza and Miss Leroux. Mr. Mills has left Valleyfield with the best wishes of those with whom he has been associated.

John S. Clancy, overseer of finishing at the Rockville Worsted Co., Rockville, Conn., has severed his connection with that company.

Joseph A. Russell has accepted the position as overseer of dyeing at the Singleton Worsted Co., Franklin, Mass. He was formerly employed at the Wuskanut Mill, Farnumsville, Mass.

Albert Dearnley has accepted the position as overseer of spinning at the Locustville Woolen Co., Hope Valley, R. I. He was formerly mule fixer at the George H. Gilbert Mfg. Co., Gilbertville, Mass.

George Walsh, for a number of years overseer of weaving at the Richard Borden Mfg. Co., No. 1 Mill, Fall River, Mass., has severed his connection with that company. He was presented with a gold watch by the help in his department, presentation speech being made by Hanna Harrington.

Joseph Hammell, for many years employed at the Derry Silk Mills, Allentown, Pa., was recently promoted to the superintendency of the Derry Mills at Northampton, Pa.

Owen Bredbury has resigned his position as second hand in the finishing department at the George H. Gilbert Mfg. Co., Gilbertville, Mass.

Albert Ferguson, who has been employed on the Tariff Board, has accepted a position at the R. I. School of Design, Providence, R. I. Mr. Ferguson comes from Lowell, Mass.

Albert Hudson, overseer of carding and combing at the George H. Gilbert Mfg. Co., Gilbertville, Mass., has resigned to accept a similar position with Thomas Oakes & Co., Bloomfield, N. J.

John Price, formerly at the Pilot Mill, Raleigh, N. C., has accepted the position as overseer of spinning at the Winona Cotton Mill, Winona, Miss.

David Harriman, Jr., overseer of carding at the Clinton Cotton Mills, Clinton, S. C., has resigned to accept a similar position at Tallassee, Ala.

George W. Starnes has accepted the position as overseer of weaving at the York Cotton Mills, Yorkville, S. C. He comes from the Saxe-Gotha Mill, Lexington, S. C.

Frank Smith has accepted the position as overseer of weaving at the Drayton Mills, Spartanburg, S. C.

John L. Davidson, superintendent of the Stonewall Cotton Mills, Stonewall, Miss., has resigned to become general superintendent of the Georgia Mfg. Co., Griffin, Ga.

D. B. Mehaffey has accepted the position as overseer of spinning at the Lancaster Cotton Mills, Lancaster, S. C. He comes from the Travora Mills, Yorkville, S. C.

A. L. Quantz has been promoted from overseer of weaving to the position of superintendent of the Arcade Mills, Rock Hill, S. C.

A. T. Brown, superintendent of the Aragon Mills, Rock Hill, S. C., has resigned to accept a similar position at the Warren Mfg. Co., Warrenville, S. C.

George Johnson has been transferred at the Hamburger Mills, Columbus, Ga., from the position of overseer of carding to the position of overseer of spinning.

J. M. Hatch, for several years secretary and treasurer of the Marlboro Cotton Mills, McColl, S. C., has resigned to accept a more lucrative position at Littleton, N. C.

W. E. Stafford, superintendent of the Arcade Mills, Rock Hill, S. C., has resigned to become superintendent of one of the mills at Burlington, N. C.

Charles Chenelle, overseer of carding at the American Thread Co., Glasgo, Conn., has resigned to accept a similar position with the Dominion Textile Co., Magog, P. Q., Canada. During his stay in Glasgo he made many friends who were sorry to see him leave yet were glad to learn that he had secured a better position. He was presented with many useful gifts as tokens of the esteem in which he was held.

At the close of the graduating exercises of the New Bedford Textile School, New Bedford, Mass., the members of the designing class presented their instructor, Samuel Holt, with a handsome Masonic watch charm. Thomas McNair, in behalf of the class, made the presentation and spoke of the appreciation and esteem in which they held their instructor. Mr. Holt responded in a suitable manner.

T. A. Ellenberg, superintendent of the Holston Mfg. Co., Lenoir City, Tenn., has resigned to accept a position as overseer of spinning at the Brookside Mills, Knoxville, Tenn.

D. B. Mehaffey has accepted the position as overseer of spinning at the No. 2 Mill of the Lancaster Cotton Mills, Lancaster, S. C., succeeding J. W. Hamer.

J. O. Williams, formerly with the York Mfg. Co., Yorkville, S. C., has accepted the position as overseer of spinning at the Ivey Mill, Hickory, N. C.

J. J. Crosby, overseer of weaving and assistant superintendent at the Pomona Mill, Greensboro, N. C., has resigned to accept a similar position with the Duncan Mill, Greenville, S. C.

W. E. Williams has accepted the position as overseer of carding and ring spinning at the G. H. Tilton & Son's Mill, Savannah, Ga. He was formerly employed at the Standard Cotton Mills, Cedartown, Ga.

J. E. Field has accepted the position as overseer of carding at the Swift Mfg. Co., Columbus, Ga. He comes from Canton, Ga.

J. W. Hamer has accepted the position as overseer of spinning at the Exposition Cotton Mill, Atlanta, Ga. He comes from Lancaster, S. C.

W. H. Ipps, formerly superintendent of the Lafayette Cotton Mill, Lafayette, Ga., has accepted a similar position with the Prattville Cotton Mill, Prattville, Ala.

Robert Whatley has been appointed superintendent of the Lafayette Cotton Mill, Lafayette, Ga., succeeding W. H. Ipps.

Wenest A. Anderson has been appointed superintendent of the Sherriffs Worsted Co., Fitchburg, Mass.

Thomas F. McHale, overseer of weaving at the Atlantic Cotton Mill, Lawrence, Mass., has severed his connection with that company, after a number of years of service.

W. H. Cheetham has accepted the position as overseer of spinning at the Great Falls Mfg. Co., Somersworth, N. H.

Charles Doherty, superintendent of the Hall Mill, branch of Henry Doherty Silk Co., Paterson, N. J., has severed his connection with that company. He is succeeded by Ray Doherty.

Rhine Rosendale has sold his interest in the Wayne Silk Dyeing Co., Paterson, N. J., to the other stockholders and has taken a trip abroad for his health.

Anthony J. Rawlins has accepted the position as second hand of twisting at the Gosnold Mills, New Bedford, Mass.

W. T. Adams has been appointed superintendent of the Steele Hosiery Mill, Statesville, N. C. He was formerly superintendent of the Hickory Hosiery Mills, Hickory, N. C.

C. C. Jones has accepted the position as overseer of finishing at the Great Falls Woolen Co., Somersworth, N. H. He comes from Worcester, Mass.

Milton Silver has accepted the position as overseer of carding at the Great Falls Woolen Co., Somersworth, N. H.

Clifford Costine has been appointed superintendent of the Yantic Woolen Co., Yantic, Conn.

P. L. Sullivan has been appointed overseer of dyeing at the Dominion Textile Co., Montmorency Falls, P. Q., Canada, succeeding George H. Norton.

George N. Foster, after thirty-one years of service for the Amoskeag Mfg. Co., Manchester, N H., has resigned. He was overseer of the weaving department. Patrick H. O'Malley is his successor.

Stephen E. Martell, who has been employed as overseer for the past thirty years at the Stark Mill, Manchester, N. H., has resigned and will retire from active duty. He has been overseer of the mill yard.

Herman O. Werner has been appointed assistant superintendent and overseer of weaving at the North Star Woolen Mill, Minneapolis, Minn. Mr. Werner started the textile department of the R. I. School of Design and has been with this school for the past nine years, having recently severed his connection.

William Souter, formerly manager of the Phoenix Lace Mills, has been appointed manager of the Calais and Nottingham Lace Works, Kenyon, R. I.

R. B. Hunt, for six years overseer of weaving at the LaPorte Woolen Mills, LaPorte, Ind., has severed his connection with that company. He was presented with a handsome ring and watch as a token of the appreciation in which he was held.

A. Tait Hope has been appointed resident agent of the Assawaga Co., Dayville, Conn. He was for a number of years superintendent of the Allen Woolen Mills, Rochester, N. Y., which have been very busy during his services. Mr. Hope was well thought of at this mill and his many acquaintances in Rochester were very sorry to have him leave.

J. E. Johnson, superintendent of the Neely and Travora Mills, Yorkville, S. C., has also been appointed superintendent of the Lockmore Mill, at the same place.

P. B. Parks, formerly employed at the Lockmore Mill, Yorkville, S. C., has been appointed superintendent of the Aragon Mill, Rock Hill, S. C.

W. L. Carter, formerly superintendent of the Athens Mfg. Co., Athens, Ga., has accepted a position as overseer of carding at the German-American Mills, Draper, N. C.

W. B. Morgan has accepted the position as overseer of weaving at the Aragon Mill, Rock Hill, S. C.

A. F Settlemeyer, formerly of Lancaster, S. C., has accepted the position as assistant superintendent of the Travora Mills, Yorkville, S. C.

G. R. Matthews has accepted the position as overseer of weaving at the Highland Park Mfg. Co., Rock Hill, S. C.

C. Enos Bean has been appointed superintendent of the Atlantic & Gulf Mills, Quitman, Ga.

G. G. Allen has accepted the position as overseer of carding on colored work at the Jennings Mill, Lumberton, N. C. He comes from the Minneola Mills, Gibsonville, N. C.

W. L. Boyd has been promoted from the position of overseer of spinning to superintendent of the Fort Mill Mfg. Co.'s No. 2 Mill at Fort Mill, S. C.

P. B. Parks, superintendent of the Lockmore Mills, Yorkville, S. C., has resigned to accept a similar position at the Aragon Mills, Rock Hill, S. C.

C. R. Brown, son of the late J. W. Brown, has been promoted to fill his father's place as superintendent of the American Textile Co., Atco, Ga.

C. D. Harrison has accepted the position as overseer of carding at the Unity Spinning Mills, LaGrange, Ga.

J. W Ouzts, formerly superintendent of the Wilson Cotton Mills, Wilson, N. C., has accepted a similar position at the Shaw Cotton Mills, Weldon, N. C.

Lawrence Parker has been promoted to the position of overseer of carding at the Agawam Co., Agawam, Mass., succeeding Louis Pendergast, who goes to the H. H. Wood & Co.'s mill at Lakeport, N. H.

Samuel Melbourne, overseer of spinning at the Jos. Simpson Sons Mill, Toronto, Ont., Canada, has severed his connection with that company.

Edward Talbot, overseer of dyeing at the Merrimack Woolen Co., Lowell, Mass., has severed his connection with that company.

Bert Haley has accepted the position as overseer of carding at the Homestead Mill, West Swanzy, N. H. He was formerly employed at the Great Falls Woolen Co., Somersworth, N. H.

Theo. Racine, who has been overseer of dressing at the Somerset Woolen Co., Monson, Mass., has severed his connection with that company.

H. E. Wadely has been appointed agent of the Bigelow Carpet Co., Lowell, Mass., to succeed Thomas J. Firth.

Patrick Duffy, overseer of carding at the Fabyan Woolen Co., Medway, Mass., has resigned.

Arthur C. Freeman, agent of the Farwell Bleachery, Lawrence, Mass., has severed his connection with that company.

Arthur O. Torrey, overseer of finishing at the Lebanon Mill, Lebanon, N. H., has severed his conection with that company.

J. Hanlan Parker, overseer of dyeing at the American Felt Co., Franklin, Mass., has severed his connection with that company.

Albert Crabtree has accepted the position as overseer of dyeing at the American Felt Co., Franklin, Mass.

Hugh B. Fraser has accepted the position as overseer of finishing at the Mascoma Mills, Lebanon, N. H.

Frank Burke, overseer of spinning for A. Roberts & Co., Claremont, N. H., has severed his connection with that company. He is succeeded by Richard Simmons.

William Ey has accepted the position as overseer of weaving at the Saxton's River Woolen Co., Saxton's River, Vt.

E. M. Bates has been appointed agent of the Lewiston Bleachery & Dye Works, Lewiston, Me. He was formerly with Joseph Bancroft & Sons Co., Wilmington, Del.

Walter Allison has accepted the position as second hand of carding at the Saunders Cotton Mills, Saundersville, Mass. He comes from Lowell, Mass.

Bartholomew Casey, overseer of finishing at the Elmdale Mill, operated by F. Scott, Uxbridge, Mass., has severed his connection with that company.

O. J. Perkins, overseer of weaving at the Reading Cotton Mills, Reading, Mass., has been appointed overseer of weaving at the Pontiac Mfg. Co., Pontiac, R. I.

George P. Lowe, overseer of the packing and finishing departments at the Pacific Mills, Lawrence, Mass., has severed his connection with that company, having been in their employ for twenty-one years.

S. P. Peterson, overseer of weaving at the Pontiac Mfg. Co., Pontiac, R. I., has severed his connection with that company.

William M. McCloud, formerly in charge of the spinning room No. 2 at the Dan River Mills, Danville, Va., has been appointed assistant superintendent of the Lockmore Mill, Yorkville, S. C.

A. Ferguson Macintyre, for the past five years in charge of the costing and statistical work for the Montreal Cotton Co., Valleyfield, P. Q., Canada, has left their employ to take up his duties with the Niagara Falls Linen Co., Niagara Falls, N. Y. He will fill the position of secretary, assistant treasurer and sales manager.

Bertram H. Borden has been elected president of the American Printing Co., Fall River, Mass., to fill the vacancy caused by the death of his father, Matthew C. D. Borden.

James Meiklejohn, for the past thirty-six years with the Niagara Textile Co., Lockport, N. Y., has taken up his quarters at Niagara Falls, N. Y., where he will assume the position of factory manager of the Niagara Falls Linen Co.

F. H. Doyle has been appointed assistant superintendent and designer at the Yantic Woolen Co., Yantic, Conn. He was formerly employed at the Concord Mfg. Co., Penacook, N. H.

Robert Hall has accepted the position as overseer of weaving at the Waucantuck Mill, Uxbridge, Mass., succeeding Thomas Smith.

Fred Jackson, overseer of dyeing at the Bay State Worsted Co., Worcester, Mass., has resigned to accept a similar position with Murphy Bros., 31st and Reed Sts., Philadelphia.

Jeremiah Bugbee, overseer of finishing at the Sayles & Jenks Mfg. Co., Warren, Mass., has severed his connection with that company.

Percy Whittaker has accepted the position as designer for Joseph Green, Emerald Mill, Frankford, Philadelphia, Pa., succeeding Alexander Costine.

F. J. Ward, for a number of years superintendent of the Wilton Woolen Co., Wilton, Me., has been appointed superintendent of the Corinna Mfg. Co., Corinna, Me.

E. C. Kennedy, superintendent of the Hartford Knitting Co., Hartford, Conn., has severed his connection with that company.

L. H. Helliwell has accepted the position as superintendent of the Lymansville Co., Providence, R. I. He was formerly designer at the Anchor Mills, American Woolen Co., Pascoag, R. I.

Omer Cloutier has accepted the position as overseer of weaving at the LaPorte Woolen Mill, LaPorte, Ind. He was formerly employed at the Wallace & Smith Blanket Mills, same city.

John Marshall, late superintendent of the Yantic Woolen Co., Yantic, Conn., has resigned to accept a similar position with the Webster Woolen Co., Sabattus, Me.

William H. Dyer, overseer of spinning at the Warren Cotton Mills, West Warren, Mass., has been given charge of carding in the No. 2 mill in addition to his duties as overseer of spinning.

John S. Clancy has accepted the position as overseer of finishing at the Sayles & Jenks Mfg. Co., Warren, Mass. He comes from the Rockville Worsted Co., Rockville, Conn.

H. M. Hartwell has been appointed overseer of weaving at the Atlantic Cotton Mills, Lawrence, Mass. He comes from Chicopee Falls, Mass.

Rudolf Teichman, salesman for Louis Rubenstein & Co., 115 Fourth Ave., New York City, for the past twenty-six years, died suddenly at his home in Brooklyn, N. Y., at the age of 42 years. He is survived by a widow and one son.

H. W. Smith, formerly overseer of weaving at the Exposition Cotton Mills, Atlanta, Ga., has accepted a similar position at the Pickett Mills, High Point, N. C.

W. C. Lowdermilk, overseer of spinning at the Alpine Mills, Morganton, N. C., has resigned to accept a similar position with the Capitola Mfg. Co., Marshall, N. C.

W. E. Tisdale has been appointed superintendent of the Anna Cotton Mill, Kings Mountain, N. C. He was formerly employed at the Sevier Cotton Mill at the same place

James Grice has been appointed superintendent of the Whitaker Mills, Blackburg, S. C. He was formerly overseer of carding and spinning at the Dilling Mills, Kings Mountain, N. C.

Arthur Coleman succeeds W. E. Tisdale as overseer of carding at the Sevier Cotton Mill, Kings Mountain, N. C.

W. E. Parr, overseer of carding at the Exposition Cotton Mills, Atlanta, Ga., has resigned to

accept the position as overseer of spinning at Scottdale, Ga.

George H. Smith has accepted the position as overseer of carding at the Capitola Mfg. Co., Marshall, N. C. He was formerly employed at the Knoxville Cotton Mills, Knoxville, Tenn.

J. W. Goodroe, overseer of carding at the Swift Mfg. Co., Columbus, Ga., has resigned to accept a similar position with the Muscogee Mfg. Co. Mills Nos. 1 and 2, at the same place.

P. M. Keller has accepted the position as overseer of carding and spinning at the Dilling Mill, Kings Mountain, N. C.

R. K. McCuen has been promoted from overseer of carding and spinning to the position of superintendent of the Fairmont Mfg. Co., Fairmont, S. C., succeeding J. T. Tidwell.

Frank McCollum has been promoted to overseer of weaving at the Wennonah Mills, Nos. 1 and 2, Lexington, N. C.

G. A. Lay has been appointed night superintendent at the Avon Mills, Gastonia N. C. He was formerly employed at the Capitola Mfg. Co., Marshall, N. C., as overseer of spinning.

E. S. Tramwell has accepted the position as overseer of spinning at the Lydia Mills, Clinton, S. C.

William P. Vaughan, overseer of carding for the past three years at the Ashland Cotton Co., Jewett City, Conn., has severed his connection with that company on account of poor health.

Walter Earnshaw has accepted the position as overseer of carding at the Ashland Cotton Co., Jewett City, Conn. He comes from Valley Falls, R. I.

Frank E. Kenyon, boss color mixer at the Cocheco Print Works, Dover, N. H., during the past fifteen years, has resigned to become superintendent of the U. S. Finishing Co., Providence, R. I.

Claude Berne, overseer of dyeing at the Winsted Silk Co., West Winsted, Conn., has tendered his resignation to accept a position with M. Heminway & Sons Silk Co., Watertown, Conn.

James Welpley has accepted the position as boss color mixer at the Cocheco Print Works, Dover, N. H. He comes from Manchester, N. H.

J. W. Sawyer, overseer of the cloth room at the Whitney Cotton Mills, Whitney, S. C., has accepted a similar position at the Pacolet Mfg. Co., Pacolet, S. C.

G. W. Brigman of Raeford, N. C., has accepted the position as overseer of spinning and winding, also assistant superintendent at the Maple Mill, Dillon, S. C.

W. C. Cheek has accepted the position as overseer of weaving at the No. 2 Eno Cotton Mill, Hillsboro, N. C.

I. C. Seigler has been promoted to the position of overseer of carding at the Girard Cotton Mills, Girard, Ala.

A. L. Whetstone has been promoted to the position of overseer of spinning at the Girard Cotton Mills, Girard, Ala.

G. R. Matthews has accepted the position as overseer of weaving at the Highland Park Mill, Rock Hill, S. C.

J. D. Fowler of McKinney, Tex., has accepted the position as overseer of slashing at the Dallas Cotton Mills, Dallas, Tex.

H. F. Jones of Fort Mill, S. C., has succeeded M. W. Driver as superintendent of the Eureka Mill, Chester, S. C.

A. C. Sykes has accepted the position as overseer of weaving at the Erwin Mills, Duke, N. C. He comes from Greensboro, N. C.

Gustave Weder has accepted the position as overseer of carding at the Louisville Woolen Mills, Louisville, Ky. He comes from South Bend, Ind.

L. Hazebrouche has accepted the position as second hand in the dye house at the Coronet Worsted Co., Mapleville, R. I.

Edward H. Moore has accepted the position as overseer of carding at the Nashua Mfg. Co., Nashua, N. H. He comes from the Saundersville Cotton Mills, Saundersville, Mass.

Thomas Gorman has succeeded M. J. Crowley as overseer of spinning at the Cutler Mfg. Co., Warren, R. I.

R. H. Evans has accepted the position as overseer of dressing for S. Slater & Sons, Webster, Mass. He was formerly employed at Providence, R. I.

John Casey has accepted the position as overseer of carding and spinning for E. C. Caswell & Co., Bloomsburg, Pa. He comes from Chatham, Ont., Canada.

Edward B. Flannagan has accepted the position as overseer of finishing for F. S. Scott, Elmdale Mill, Uxbridge, Mass. He comes from North Bellingham, Mass.

John Flannagan has accepted the position as overseer of carding at the Paul Whitin Mfg. Co., Northbridge, Mass. He comes from Cohoes, N. Y.

Samuel A. Steel has accepted the position as overseer of carding at the Boott Mills, Lowell, Mass. He was formerly employed at the Paul Whitin Mfg. Co., Northbridge, Mass.

Charles W. Auel has been appointed superintendent of the Fabyan Woolen Co.'s mill at Medway, Mass., succeeding the late Charles H. Meyer, Sr.

Stephen L. Duffie has accepted the position as overseer of finishing at the Auburn Woolen Co., Peterboro, Ont., Canada. He comes from Pittsfield, Mass.

D. J. Dooley has accepted the position of overseer of dyeing and finishing at the Gilsum Woolen Co., Gilsum, N. H.

William Rutledge has been appointed assistant

superintendent and overseer of weaving at the Wallace & Smith Blanket Mills, LaPorte, Ind. He was formerly employed at the Oakland Mfg. Co., Reisterstown, Md.

M. J. Coyle has been appointed assistant superintendent at the Slatersville Finishing Co., Slatersville, R. I., succeeding Charles R. Marvin, who has taken the position of superintendent of the Lewiston Bleachery, Lewiston, Me.

J. F. Bresett has accepted the position of overseer of dyeing for the Cotton Thread Ltd., Montreal, Canada. He was formerly employed at the Ray Mill, American Woolen Co., Franklin, Mass.

J. H. Clifford has been appointed overseer of spinning at the Louisville Woolen Mills, Louisville, Ky. He comes from the Bristol Mfg. Co., Plainville, Conn.

David Stewart has accepted the position as overseer of dyeing at the Bay State Worsted Co., succeeding Fred Jackson.

John Hartley has accepted the position as overseer of dyeing at the Merrimack Woolen Co., Dracut, Mass., succeeding E. Talcott.

Joseph F. Linberg has been appointed second hand in the dyeing department at the J. R. Montgomery Co., Windsor Locks, Conn.

Joseph D. Price has been appointed overseer of dyeing and finishing at the Central Worsted Co., Central Village, Conn. He comes from Ashaway, R. I.

Charles A. Bellinger has engaged with the Huntington Mfg. Co., Huntington, Mass., as overseer of burling and sewing. He comes from the Aetna Mills, Watertown, Mass.

Thomas F. Butler has accepted the position of overseer of dressing at the Somerset Woolen Co., Monson, Mass. He was formerly at Harrisville, R. I.

William J. Mason has accepted the position as overseer of spinning at the Chester Spinning Co., Chester, Pa. He comes from Lowell, Mass.

Henry L. Stewart has accepted the position as overseer of finishing at the Rodman Mfg. Co., Lafayette, R .I. He was formerly employed at the Akela Mill, Pascoag, R. I.

Henry Rowe has accepted the position as assistant superintendent of the bleaching department of the New York Mills, New York Mills, N. Y.

Joseph P. Delahunty, Jr., vice-president and general manager of the Delahunty Dyeing Machine Co., of Pottstown, Pa., died at his home in that city. He was born Jan. 19, 1855. Mr. Delahunty received injuries while returning from Jacksonville, Fla., to Philadelphia in company with his father who had been in Jacksonville for his health. He is survived by a wife and three children.

W. L. Ball, for the past three and a half years agent of the Tallassee Falls Mfg. Co., of the Consolidated Cotton Duck Co., Tallassee, Ala., has been transferred to the general manager's department of the International Cotton Mills Corporations, with offices at 86 Worth St., New York City. Mr. Ball will be succeeded as agent by F. D. Milstead, formerly of Tallassee, Ala., but latterly of Atlanta, Ga.

Andrew Archer, overseer of weaving at the Glen Worsted Co., Elmville, Conn., has been appointed overseer of weaving at the Ray Mill, American Woolen Co., Franklin, Mass.

George Blackburn has been appointed overseer of weaving at the Glasgow Mills, Hillsdale, Md. He formerly held a similar position at the Burlington Mill, Winooski, Vt.

Lees Mallinson, overseer of finishing at the Hoosac Worsted Mills, North Adams, Mass., has resigned.

John T. Mitchell, overseer of spinning at the Shetucket Co., Norwich, Conn., has resigned and is succeeded by Henry Ensling.

L. C. Hollingworth has accepted the position of superintendent at the Plainfield Woolen Co., Central Village, Conn. He recently resigned a position as superintendent of the Namquit Worsted Co., Bristol, R. I.

E. W. Billings, who has been in charge of the carding and spinning at the Fort Dummer Mills, Brattleboro, Vt., has resigned.

Joseph N. LaForge has acepted the position as overseer of wool sorting for the A. L. Sayles Co., Pascoag, R. I. He comes from North Chelmsford, Mass.

Denver Potts has accepted the position as overseer of knitting for J. Broadbent & Son, Unionville, Conn. He comes from Piqua, Ohio.

William H. Broadbent, for a number of years superintendent of the Plainfield Woolen Co., Central Village, Conn., has severed his connection with that company.

Elwood Ward has accepted the position as overseer of weaving at the Woolen Mfg. Co., Beaver Dam, Wis. He was formerly employed at the Hawthorn Mills, Glenville, Conn.

William Muir has accepted the position as assistant designer at the Hoosac Worsted Mills, North Adams, Mass. He was formerly employed at the Sutton Mills, North Andover, Mass.

Otto H. Muller, overseer of carding and combing at the Hudson Worsted Co., Hudson, Mass., has resigned to accept a position at South Manchester, Conn.

Harry Hewitt has been appointed assistant superintendent of the Linn Woolen Co., Hartland, Me. He was formerly employed at the Thistle Worsted Co., Elmville, Conn.

DEATHS.

Hon. John H. Bradbury died at his home in Old Lyme, Conn., of apoplexy. He was born in Webster, Dec. 12, 1841. After finishing school he entered the employ of the firm of J. & W. Bradbury, satinet manufacturers, and stayed with them until the business was moved to Old Lyme. Later Mr. Bradbury went into partnership with

his father under the firm name of John Bradbury Co. He is survived by a widow, one son and a daughter.

George R. McDougall, the well known overseer of woolen carding, died at a New York hospital at the age of 43 years. He had been carder in several large mills in the New England and Southern States and was an active member of the National Association of Wool and Worsted Overseers. A widow survives him.

Royal Chapin Taft, a former governor of the State of Rhode Island and a well known manufacturer of woolen goods, died June 4 in his ninetieth year. He was connected several years ago with what was known as Taft & Weeden, Weybosset Mills, Providence, R. I.

Edmond D. Graff, who has been connected with the firm of Peter Graff & Co., Buffalo Mills, Worthington, Pa., died at the Homeopathic hospital in Pittsburg, Pa., at the age of 69 years. He had been in partnership in the Buffalo Mills with his brother for a number of years.

John E. Cotton, a successful manufacturer and public benefactor of Nashua, N. H., died at his home in that city on June 18. He was born in Fairfield, Me., March 26, 1850, and attended the public schools of that town. In 1874 he started manufacturing woolen goods in a small way at Fairfield, Me., and later became associated with Frank Stevens of Waterville, Me. He is survived by a wife and one daughter.

Percy S. Houghton, one of the best known mill superintendents in New England and also prominent as an inventor of mill appliances and machinery, died at Woonsocket, R. I., June 14. He was at one time superintendent of the Blackstone Mfg. Co., Blackstone, Mass., and held similar positions at Barre and Northbridge, Mass. For the past twelve years he had worked as an inventor. He was born in Princeton in 1826.

Frank A. Collamer, superintendent of the Elizabeth Knitting Mills, William Sloane & Co., Berkley, Va., who was formerly a resident of Amsterdam, N. Y., died at his home in Norfolk, Va. He had been superintendent for this company for the past seven years and is survived by a widow and two children. He was a member of the order of Odd Fellows.

Thomas Quinn, for a number of years overseer at the Morse Cotton Mill, Putnam, Conn., died at the home of his son, Dr. David Quinn of Boston, Mass., at the age of 70 years. He was one of the oldest citizens of Putnam.

Arthur Merritt, president of the Airedale Mills Co., Pittsfield, Mass., died at his home in Milton, Mass., at the age of 53 years. He was also in the dye stuff business in Boston for a number of years and is survived by a widow and one son.

Charles Henry Meyers, superintendent of the Sanford Mill, owned and operated by the Fabyan Woolen Co., Medway, Mass., died at New London, Conn., after an operation from cancer. He was born in Germany sixty-nine years ago and for several years had been superintendent at Holyoke, Mass., and Schenectady, N. Y. He went to Stafford Springs, Conn., thirty-eight years ago to become superintendent for Rawitser Bros. He is survived by a wife and five children.

William N. Brown, for twenty-three years overseer of weaving at the Ray Mill, American Woolen Co., Franklin, Mass., died Saturday, June 22, of Bright's disease at the age of 57 years. He is survived by a wife and three children.

John R. Proctor has been engaged as general manager of the Grand Rapids Hosiery Co., Grand Rapids, Mich. He comes from Kenosha, Wis.

Edward E. Kilburn, head of the Kilburn Knitting Machine Co., died at his home in New Brunswick, N. J., at the age of 80 years. He formed the Norfolk, Va. Hosiery Co., and later the Norfolk & New Brunswick Hosiery Co., New Brunswick, N. J. Mr. Kilburn made the first practical automatic hosiery machine which was introduced in this country.

Mills Starting Up.

*Massachusetts, New Bedford. Finklestein & Dimond, silk manufacturers of Paterson, N. J., and Bramson and Kutner, silk jobbers of New York City, control the Gilt Edge Silk Co., a new corporation recently organized, which has leased the plant of the Crescent Mfg. Co. for one year with option of purchase. Manufacturing was started June 1, making silk linings for women's wear. The officers are Israel Kutner, president; Morris Finklestein, treasurer and superintendent; Philip Dimond, agent and buyer.

*Pennsylvania, Reading. Application for a charter for the Stunzi Sons Silk Co. will be made shortly by C. G. Aschmann, president and secretary, and Charles Steiner, vice-president and treasurer. The new corporation will operate the plant of the Steiner & Talcott Silk Co., which was purchased several weeks ago by Stunzi Sons, Ltd., of Zurich, Switzerland.

New York, Kingston. Wm. E. Nugent, of Amsterdam, has leased the Ashokan Knitting Mill and after extensive repairs and alterations will make union suits, paying special attention to children's goods. Mr. Nugent will start with an output of 350 dozen suits daily. Thomas J. Sutton is assisting Mr. Nugent in getting the machinery into shape for manufacturing.

*Ohio, Barnesville. The Barnesville Knitting Co., reported incorporated a week ago with capitali stock of $10,000, has organized with J. B. Conard, president, and J. B. Mercer, treasurer, manager and buyer. Wool yarns and hosiery are being manufactured in the plant of the old Barnesville Hosiery Co. The plant contains 1 set of cards, 240 spindles, 20 knitting machines, gas engine and dyeing plant.

Ohio, Cleveland. The assets of the Keetch Knitting Co. have been purchased by C. K. Sunshine of the Sunshine Cloak & Suit Co. for $19,000. A new company will be formed by Mr. Sunshine in which Morris J. Wolf, president and treasurer of the old concern, will be interested.

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.

COTTON.

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New Mills.

*North Carolina, Charlotte. The Thayer Mfg Co. has awarded contracts to the Fiske-Carter Construction Co. for buildings, including a 2-story, 150 by 225-ft., spinning mill, a 1-story and basement, 163 by 210-ft., weaving mill and operatives' cottages. Details of this company have been given previously.

*North Carolina, Henderson. A new plant is to be built by the Harriet Cotton Mills, which will be known as No. 3 Mill, and work has already been started on the foundation. It is hoped to have the building completed and equipped by the end of September. The mill will be of brick and cement construction, two stories high, 100 by 136 feet, and will have a capacity of 10,000 spindles. Electric power will be used from the Carolina Power Co. transmission system. D. Y. Cooper is president, J. B. Owen, treasurer, and J. A. Moore, secretary. Mr. Cooper and Mr. Moore attend to the buying.

*South Carolina, Kershaw. Leroy Springs, president of the Lancaster Cotton Mills, Lancaster, S. C., has been elected president of the new Kershaw Cotton Mill. John T. Stevens has been elected vice-president and J. M. Carson, Kershaw, secretary and treasurer. The incorporation of this company with capital stock of $200,000 was recently noted. It is expected ground will be broken within a month for the construction of buildings.

Tennessee, Prendergast. W. J. McLinden, Jr., W. R. Fronobarger and J. Morrow are organizing a company to build a cotton yarn mill. They expect to organize about July 1, to build a mill of 10,000 spindles and make 20s yarn, operating by electric power. $80,000 has been subscribed. Mr. Morrow states that they hope to begin construction work about August 1.

*Texas, Post. The correct name of the cotton mill company headed by Chas. W. Post of Battle Creek, Mich., is the Postex Cotton Mills. Report of the incorporation and details of the proposed plant have been given in previous reports. The Unit Construction Co. of St. Louis has the contract for buildings, which will be constructed of reinforced concrete throughout. C. W. Post, Battle Creek, Mich., is president; H. W. Fairbanks, Post, vice-president and manager; J. F. Hartford of Post, secretary, and A. B. Williams of Battle Creek, treasurer.

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Enlargements and Improvements.

Alabama, Birmingham. In connection with the overhauling of the equipment of the Central Mills of Sylacauga, and the Avondale Mills of Birmingham, both controlled by the Comer interests, additions will be made to the power plants. There is no definite information regarding the proposed new $500,000 cotton mill.

*Alabama, Prattville. Besides building an addition to be used for cloth room and office, the Prattville Cotton Mills are building a new slasher room to take the place of the old one and putting in new cards and drawing frames, replacing old equipment with new.

*Alabama, Shawmut. The new equipment to be added to the Shawmut Mills of the West Point Mfg. Co. includes 5,500 spinning spindles, 36 cards and other preparatory machinery, also new looms and electric power equipment.

*Alabama, Talladega. New winding equipment ordered by the Highland City Mills is being installed and with other improvements being made will give a greatly improved plant. About $15,000 is being expended.

Georgia, Atlanta. The Exposition Cotton Mills have awarded contract for 16,000 spindles with preparatory machinery. A 2-story addition was completed a few months ago and a general overhauling of the plant is in progress.

*Georgia, Columbus. Work has been started on the large addition to the plant of the Bibb Mfg Co., which is to be equipped for the manufacture of fabrics from Sea Island cotton yarns.

Georgia, Eatonton. An addition is to be built to the Imperial Cotton Mills, but details have not been secured. The executive office is at Concord, N. C. J. W. Cannon, Concord, is president; M. L. Cannon, Concord, treasurer, and Robt. K. Matthews, Eatonton, superintendent and buyer of supplies.

Georgia, Lafayette. Old looms in the Union Cotton Mills are to be replaced by 242 automatic looms.

*Georgia, Macon. The Bibb Mfg. Co. have not fully decided what they will do in regard to putting up the proposed new 17,000-spindle mill; a decision will probably be reached in about ten days. It has been noted that the Bibb Mfg. Co. contemplates building a new mill at a point near Macon and moving one of its branches into the new building, making an increase of 17,000 spindles in connection with the change.

*Georgia, Newnan. The Newnan Cotton Mills are making an addition to their No. 2 Mill and installing 13,312 spindles.

Massachusetts, Worcester The capital stock of the Dudley Mills Co. has been increased from $25,000 to $50,000, and enlargements will be made to take care of the increase in business. Plans are under way to add 36 new looms; the present equipment is 24 looms, operated on fancy cotton and

silk fabrics, by electric power. Phillip E. Dudley is president and treasurer and Harold F. Sherman, superintendent.

New Jersey, Passaic. The Brighton Mills have received a permit for the erection of an addition which will cost $65,000. It is said the new building will be used entirely for weaving and will be fully equipped as soon as completed. This concern manufactures special fabrics of Sea Island, Egyptian and other cotton yarns and also sale yarns.

*North Carolina, Gibsonville. Improvements in the dyeing department of the Minneola Mfg. Co. have been completed. They are not contemplating any other changes at present.

*North Carolina, Kannapolis. Foundation has been put in for the new mill of the Cannon Mfg. Co., which it has been reported will be equipped for spinning yarns from waste. It will be 2 stories high, 100 by 400 ft. A new bleachery is also to be built as an addition to the bleachery now in operation and will be 3 stories high, with a basement to be used as a machine shop.

*North Carolina, Lexington. The work of rebuilding the warehouse of the Nokomis Cotton Mills, recently destroyed by fire with loss of about $17,000, has been begun.

*North Carolina, Rockingham. Contract has been awarded by the Ledbetter Mfg. Co. for 2,500 spindles with preparatory equipment to be installed in the new 2-story mill now under construction.

North Carolina, Randleman. New electric motors are being installed in the raw stock dyeing department of the Deep River Mills. Motors are also being installed in the picker room. This concern took over the plant of the Naomi Falls Mfg. Co. and the Randleman Mfg. Co. several months ago.

North Carolina, Rutherfordton. It is reported the Cleghorn Mills are having an additional story built on one of their mills to provide room for possible increases in the equipment. Cotton yarns in skeins and balls and on cones, tubes and beams are manufactured.

North Carolina, Shelby. In addition to increasing the equipment of the Ella Mfg. Co., the present capital of $100,000 will be at least doubled. All contracts have been awarded and include 5,200 spindles and 126 automatic looms.

*North Carolina, Spray. The Thread Mills Co. (controlled by Marshall Field & Co., Chicago) is carrying out an extensive plan of improving the equipment and methods in the five new mills recently purchased, known as the American Warehouse, Lily Mill, Spray Woolen Mills, Rhode Island Mill, all of Spray, and the German-American Mill at Draper.

*South Carolina, Easley. Permission has been granted the Glenwood Cotton Mills to increase their capital from $240,000 to $600,000. The increase was voted at a recent meeting of the stockholders. A new three-story brick mill, 342 by 105 feet, is under construction, and will have 20,000 spindles and 560 looms, with steam power equipment.

Pennsylvania, Philadelphia. It is reported that Eli Titherington & Sons, now located at 79 Wister St., Germantown, are having erected a building of their own in the neighborhood of Stenton and Godfrey Aves., into which they will remove as soon as completed and enlarge their equipment. They are manufacturing terry cloths on 13 broad looms, selling the production direct.

*South Carolina, Greenville. No additional construction will be necessary for the addition of 10,000 spindles and 200 looms by the Brandon Mills as the present floor space will be used.

*South Carolina, Greenville. Contracts for additions which will double the plant of the Carolina Mills have been awarded to the Gallivan Building Co. of Greenville. Plans and specifications have been completed by Lockwood, Greene & Co. of Boston. It has been noted that a meeting of the stockholders of the Carolina Mills will be held on June 18 for the purpose of voting to increase the capital stock from $200,000 to $600,000. Bag goods and print cloths are manufactured on 14,000 ring spindles and 400 looms.

*South Carolina, Rock Hill. New equipment, including 8,192 spindles, is being installed in the addition to Mill No. 2 of the Highland Park Mfg. Co. and will be in operation by August 1. This will give a total of 16,384 spindles. The main plant is at Charlotte, N. C.

*South Carolina, Rockingham. Contract has been awarded by the Pee Dee Mfg. Co. for the addition recently reported, to T. C. Thompson & Bro. It has been noted that 2,800 spindles, with preparatory machinery, and 136 looms are to be installed.

South Carolina, Ware Shoals. A three-story addition of reinforced concrete construction will be built for the Ware Shoals Mfg. Co., under the direction of J. E. Sirrine. Sheetings, drills and prints are manufactured on a present equipment of 52,000 ring spindles and 1,400 looms.

Texas, McKinney. The capital stock of the Texas Cotton Mill Co. has been increased from $190,000 to $220,000, and the company plans to increase the capacity of the plant. The present equipment is 5,280 spindles and 160 looms, operated on cheviots, denims, pin checks and awning stripes. J. H. Ferguson is president, W. B. Newsome, secretary and treasurer, and Paul K. McKenney, general manager and buyer.

Virginia, Danville. Plans and specifications are being drawn by Lockwood, Greene & Co. for a new mill for the Riverside & Dan River Cotton Mills to be 500 by 50 ft., 3 stories and basement, also for a 2-story weave shed, 400 by 300 ft. The capacity of these additions will be approximately 80,000 spindles and 2,200 looms.

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Mills Starting Up.

*Connecticut, Putnam. Some operations will be started in the plant of the Manhasset Mfg. Co.

before the end of this month. Good progress is being made on changes in the buildings formerly occupied by the Monohansett Mfg. Co. and when completed the plant will have 10,000 spindles, 40 looms, bleachery, steam and water power equipment for manufacturing tire fabrics from Sea Island and Egyptian cotton yarns and absorbent cotton. It was noted previously that the capital stock of the new company is $175,000. Edwin V. Livesey is president; Roland H. Ballou, treasurer, and Wm. Bamber, superintendent. The treasurer attends to the buying. The office of the new concern is located in the Howard Building, Providence.

*Georgia, Dublin. At a meeting of stockholders of the Oconee River Cotton Mills, formerly the Georgia Cotton Mills, it was decided to resume operations within a few days. The following officers were elected: W. N. Leitch, president; M. H. Edwards, vice-president; C. H. Peacock, secretary and treasurer, and S. C. Smyly, manager. These men are the officers of the Eastman Cotton Mills of Eastman, Ga., which recently secured control of this property.

*Georgia, Senoia. A reorganization of the Senoia Duck Mills is taking place, and when the plant is started up again, it will be under the style of the Senoia Duck Mfg. Co., a new corporation with a capital stock of $100,000. July 25 is the date decided upon for the resumption of manufacturing. The officers have not been decided upon, but W. A. Robinson, of Cedartown, will be the manager. The Senoia Duck Mills is a new plant, equipped with 40 broad and 40 narrow looms for weaving various weights of duck fabric. It was closed only a few months ago. Yarns are purchased.

Massachusetts, Taunton. Men connected with the Westville Spinning Co. have purchased the old Elizabeth Poole Mills on Adams St. from the Old Colony Mfg. Corp., and the plant will be started up. Fred S. Culver, now superintendent and assistant treasurer of the Westville Co., will be treasurer.

New Jersey, Sussex. A. S. Anable, commission merchant and manufacturers' agent, 47 Leonard St., New York, has purchased the old Sussex Mill and will make a line of Terry cloth fabrics. The plant contains 108 looms which have been operated on Turkish towels and Terry cloth specialties, also bleaching, dyeing and finishing equipment and will be started up with 50 hands, using 2/20s, 2/30s, 1/14s and 1/16s yarns. The Sussex Mills were shut down about two years ago as a result of financial difficulties.

*New York, Pike. The new Genesee Textile Co., incorporated a short time ago with a capital stock of $35,000 to take over the business of the Textile Specialty Co., has begun manufacturing. L. A. Mason continues in charge of the plant and is treasurer of the new company. Cotton plush specialties are manufactured on six broad and two narrow looms.

North Carolina, Burlington. The Bellevue Mills have been purchased by the King Cotton Mill Corp., a new concern which has been organized with $50,000 capital stock. H. D. Eichelberger, of Richmond, Va., is president; I. G. King, Burlington, vice-president; J. M. Browning, Burlington, secretary. The Bellevue Mills contain 3,500 spindles and 150 looms, also dyeing and finishing department, and have operated on domets, flannels, sheetings and drills; the plant has been idle for about two years.

*North Carolina, Stubbs. The reorganized Buffalo Mfg. Co. has elected Charles C. Blanton president, A. H. Cline, vice president, and Z. C. Mauney, secretary, treasurer and manager. The manufacture of 2/30s cotton yarns will be started about the middle of June.

*South Carolina, Chesnee. The new Chesnee Mills, under construction for several months, are completed and some of the equipment has been started.

*South Carolina, Greenwood. The Panola Cotton Mill has begun manufacturing and within a few days all the machinery in the mill will be in operation. Credit for this is due to S. H. McGhee who was elected president a few months ago. A fine grade of print cloth is being manufactured.

WOOLEN.

New Mills.

*Maine, Corinna. Work on the mill buildings for the new Corinna Mfg. Co. has been started. The main building will be 120 by 53 ft. It has been noted that this company will build a mill of 6-set capacity, but will begin manufacturing with 2 sets. The capital stock is $50,000. J. H. Winchester is president and John E. Gray, a local hardware dealer, treasurer and buyer.

*Massachusetts, Hudson. The new worsted yarn spinning company will be organized as the Wottoquottoc Worsted Co. with capital stock of $90,000 and will have 4,000 spindles with preparatory equipment for making single and 2 ply worsted yarns, 16 to 50, chiefly from tops made by the Hudson Worsted Co. E. P. Larkin will be president; James H. Hancock, treasurer and buyer, and A. W. Morse, secretary. The mill will be operated by electric power. It was noted in an earlier report that plans had been made for a factory building, 1 story high, 300 by 75 ft.

*Pennsylvania, Philadelphia. The Cambridge Worsted Co., located in the Ontario Mills on 2d St., above Columbia Ave., are running a part of their plant and are installing the balance of equipment of 19 broad looms. They are expected to be running in full within three weeks. The capital stock is $25,000. J. Y. Hogg is president and R. T. Foulke is treasurer. Fancy worsted men's wear is being manufactured, using 2/26s to 2/50s worsted yarn.

Enlargements and Improvements.

Canada, Ontario, Eganville. A new mill is under construction for John Childerhouse & Son, proprietors of the Eganville Woolen Mills, whose plant was burned out some time ago. They man-

ufactured tweeds, flannels, blankets and similar goods on 1 set of cards and 5 looms, dyeing the product and operating by water power.

*Connecticut, Stafford Springs. Nineteen of the new looms ordered by the Rhode Island Textile Co. have been set up and when these are running the balance of the 40 looms that were ordered will be installed.

Connecticut, Stafford Springs. The Warren Woolen Co. will build at once a two-story brick addition, 136 by 53 feet, to take the place of five wooden buildings. J. H. Jones of Willimantic has received the contract for the construction work. This concern makes woolen goods for men's and women's wear and has made extensive improvements in the last year.

*Maine, Limerick. About 1,000 new spindles will be installed in the Limerick Mills when the 3-story enlargement, now under construction, is completed. Abram Whittaker is general manager and buyer. Worsted sale yarns, 1s to 40s are manufactured.

*Massachusetts, Holyoke. The Casper Ranger Construction Co. has secured the contract for the erection of the $50,000 addition to the Germania Mills. Work will be started immediately.

*Minnesota, Minneapolis. There will be no extensive changes in the plant of the North Star Woolen Mill Co. beyond the removal of the old waterwheel and the installation of a new wheel of 400 h. p., direct connected to generator.

New Jersey, Nutley. Additions are being made to the plant of Samuel Lobsitz to meet the increased demand for their products. The business has been incorporated with a capital stock of $250,000, and Samuel Lobsitz has been elected president, Henry L. Basch, vice president, and Wm. F. Pippey, treasurer. This company has an office at 260 Church St., New York City.

New York, Fulton. New water wheels are to be installed in the Fulton Worsted Mills of the American Woolen Co. and contract has been awarded. These wheels will be direct connected to generators.

Oregon, Portland. Plans for an enlargement of the Multnomah Mohair Mills have been completed by Lewis I. Thompson and call for a structure two stories high, 85 by 200 feet, to be used as a combination warehouse and factory. The ground floor will be used for storage purposes and the second floor for weaving, the initial equipment being 20 looms. Preliminary work has already been started and the mill is to be finished in two months. This concern manufactures mohair and luster linings, and has two combs, six preparers and 80 looms. The plant is located at Selwood, and the office is in the Couch Bldg., Portland.

Pennsylvania, New Cumberland. A new motor has been ordered by the Susquehanna Woolen Co., and when it is installed, six of the new looms recently set up will be started. Business is reported to be very brisk.

Pennsylvania, Norristown. The Coral Manufacturing Co., in addition to enlarging their plant by the erection of additional buildings, have increased their looms and are now operating 27 broad and 43 narrow looms on art squares, bath rugs and granite carpets, which they sell direct through their New York office at 26 E. 17th St.

Pennsylvania, Philadelphia. George W. Lefferts & Co., commission spinners of worsted yarns up to 32s on the Bradford system, located in the old Godshalk Mills, 23d and Hamilton Sts., have recently purchased the buildings at 3d and Moore Sts. formerly operated by the Southwark Mills Co., consisting of a three-story mill, 175 by 50 feet, and a four-story building, 80 by 40 feet. The plant at this time contains 2,700 spindles which the company expects to double after their removal to their quarters.

Pennsylvania, Stroudsburg. Thos. Kitson & Son have resumed manufacturing. The plant was closed a few days while new concrete foundation was built under the boilers.

*Rhode Island, Mapleville. Work has been started on the addition to the finishing department of the Coronet Worsted Co., which will be 1 story high, 31 by 176 ft. It will be completed before the end of June and put in use as early as possible.

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Mills Starting Up.

*Maine, South Windham. The Windham Mfg. Co. has been incorporated under the laws of Maine with capital stock of $100,000 and has purchased the Robinson Mills. Samuel Rindge of Parker, Wilder & Co., is president and treasurer, and F. W. Freeman, formerly treasurer and general manager of the Aetna Mills at Watertown, Mass., is manager. Mr. Freeman has been engaged some weeks in getting the plant in operation and making samples. The plant contains 4 sets and 56 looms.

Massachusetts, Hyde Park. The Bleakie Mill will be put in first class condition for the manufacture of felt by the American Felt Co., who recently purchased the property. This will take some months, necessitating alterations, new construction and changes in the equipment. Edmund H. Sears, vice-president of the American Felt Co., 244 Summer St., Boston, has the matter in charge.

*Massachusetts, Spencer. David Bigwood, formerly of the Taft Woolen Co., Caryville, the purchaser of the Priscilla Woolen Mill, has organized the Bigwood Woolen Co. with capital stock of $25,000 and will put the plant in operation at once on woolens and union cassimeres. A charter has been secured under the laws of Massachusetts and Mellen H. Albro of Milford, has been elected president and David Bigwood, treasurer, agent and buyer. The plant contains 3 sets, 17 looms, dye house equipment for raw stock and piece dyeing, and steam and water power equipment.

Pennsylvania, Burmont. The Burmont Mill branch of the Columbia Worsted Mills at Wallinford, is now in part operation on French spun worsted yarns with Augustus Koehler as superintendent. The mill contains an equipment of

7,000 worsted spindles operated on worsted yarns up to 50s for weaving and knitting. The company is also operating another mill at the same location on woolen knitting yarns, 5s to 26 cut, with 5 sets and 1,700 woolen spindles. It is also said that the company has in mind, after putting the worsted mill in full operation, a plan to put up an additional building on an adjoining lot to contain 8,000 French spindles giving them an equipment of 15,000 spindles in all. The plants are run by oil, gas and water power.

KNIT.

*Illinois, Belleville. Quarters at 207 N. Jackson St. have been secured by the new St. Clair Hosiery Mills and the directors hope to begin manufacturing shortly after July 1. At first mercerized and silk fine gauge half hose will be made from 2/36s, 2/40s, 2/50s and 2/60s yarn, employment being given to 25 hands. The capital stock of this company is $12,000. Philip Knapp has been elected president; Peter Fellner, treasurer, and Curt J. Vogel, manager and buyer. A dye house will be equipped and electric motors will be installed. The product is to be sold direct.

New York, New York. About July 15, Joseph Samuels & Co., 133 W. 20th St., will install an equipment of knitting machines for making high grade silk neckties. The machines have already been ordered and will be put in operation as soon as delivered.

New York, New York City. Under the name of "The Imperial," Sol. Fried will equip a plant at 133 Greene St. in which he will manufacture a line of high grade woolen and worsted infants' and children's sweater coats. He will sell direct. Sam Newdrossel, formerly of Cleveland, will be superintendent.

Pennsylvania, Norristown. The new mill being erected by Carney & Taubel at Penn and Markley Sts., will be equipped with 200 knitters and 300 ribbers on which they will manufacture children's and misses' ribbed hosiery 144-220 needle goods, which they will dye and finish and sell direct. The building, which will be 120 by 40 feet, three stories, of brick mill construction with a wing 40 by 60 feet, two stories high, is now under way and they expect to have it ready for the installation of the machinery by October 1st next. Mr. Carney will have charge of the plant which will be operated by steam and electric power.

Pennsylvania, Orwigsburg. A new knit underwear concern will equip a plant in the Kern Bldg. some time in August and will manufacture high grade union suits and ladies' ribbed vests under the style of the Excelsior Knitting Co. Wm. Ehly, Morris Schraer and John N. Heim are interested.

*Pennsylvania, Orwigsburg. The new Excelsior Knitting Co., which was previously reported as to establish a plant in the Kern Bldg., will begin manufacturing high grade union suits and ladies' ribbed vests about Sept. 1, and will sell through the J. H. Leich Co., New York City. The plant will be operated by electric power. John N. Heim will be president, M. C. Schraer, secretary, and Wm. Ehly, general manager. The Post Office address is Box 145, Orwigsburg.

*Pennsylvania, Philadelphia. Louis Bry & Co., recently reported by us as starting up in the manufacture of "Boucle" cloths at Mascher St. and Lehigh Ave., will operate their plant under the name of the Florence Mill with James Armitage as superintendent and buyer. The plant will contain 10 knitting frames and will use cotton, worsted, woolen and mohair yarns. It is also the intention of the company to buy raw stock and have their yarns made up on commission.

Pennsylvania, Philadelphia. The Chas. Seidman Company, Inc., with a capital stock of $10,000; Chas. Seidman, president and treasurer, and Edward Frimmel, superintendent, have leased a portion of the building at the S. E. corner of 4th and Vine Sts., in which they have installed 30 knitters and 4 sewing machines on which they are manufacturing crocheted and woven neckwear and mufflers of cotton and mercerized yarn, selling the production direct. It is the intention of the company at a later date, or when more floor space can be secured in the building, to put in their own winding, coning and spooling.

Pennsylvania, Philadelphia. Richard Schletter, who resides at 3438 Jasper St., and who has been connected with the Lehigh Silk Hosiery Co. located in this city, will start up a plant for the manufacture of full fashioned silk hosiery within the next few weeks. It is impossible at this time to give the location of the new plant, but Mr. Schletter reports that the machines have already been purchased.

Pennsylvania, Philadelphia. The Concordia Silk Hosiery Mills with George Wucherer, Carl Goeckeritz and Willi Woeger, as proprietors, will start a plant in this city for the manufacture of high grade full fashioned ingrain silk hosiery. They will operate 10 full fashioned frames, 3 loopers and 3 seamers, in a location yet to be secured, the equipment having already been purchased. Mr. Wucherer, whose home address is 3491 Jasper St., will be the superintendent and buyer. The production will be sold direct.

Pennsylvania, Philadelphia. The Roxborough Knitting Mills are equipping a portion of the building at 35 South 3d St. for the manufacture of men's cardigan coats and men's, boys' and infants' sweater coats, which they will sell to the jobbing trade only. Samuel Marku located in the Drexel building, this city, being the selling agent. The plant will commence operations with 12 round frames, 2 flat knitters and 15 sewing machines, with Jacob Herzberg, formerly superintendent of the Ideal Knitting Mills as superintendent. They will use electricity as the motive power and buy wool, worsted and cotton yarns, selling their production under the name of the "Roxborough Knit" sweater coats.

Pennsylvania, Philadelphia. An equipment for the manufacture of silk neckties will be put in at 253 S. 5th St. by the Cotler Knitting Mills. They

have already installed one knitter on which they are experimenting.

Pennsylvania, Quakertown. Construction work will be started on a mill for the new Quakertown Knitting Mills Co. during July, to have capacity of 100 knitting machines, 20 loopers, 4 welters and 25 ribbers. Electric power eqiupmet will be installed and a dye house equipped. The product will be ladies' cotton, mercerized and silk hosiery. E. O. Correll is president and O. Paul Kaffke, formerly manager of the Easton Knitting Mills Co., Easton, Pa., treasurer and buyer.

*Pennsylvania, Shamokin. A new hosiery knitting plant has been established at 120 E. Chestnut St., under the name of the Giles Mfg. Co., and ladies' fine hosiery in mercerized, silk and lisle, is being manufactured on 10 knitting and 2 sewing machines. W. T. Giles is general manager and treasurer, Fred English, agent, and W. J. Giles, superintendent.

Rhode Island, Providence. A new hosiery manufacturing business will be established at 12 Beverly St. by Samuel Youde, formerly superintendent of the British Hosiery Co. at Thornton, and another party. A copartnership will be formed under the style of the Rhode Island Hosiery Co. Mr. Youde's address is Box 71, Thornton, R. I.

Tennessee, Harriman. A $100,000 plant for knitting hosiery will be established here under the title of the Harriman Hosiery Mills. The company has been organized and has purchased a site. Some of the men interested are: C. E. Hendrick, Sam J. Sparks, Robert B. Cassell and W. A. Rockwell of Harriman; Garnett Andrews, Jr., of Chattanooga, Tenn; T. A. Wright of Knoxville, Tenn.; James F. Tarwater and Thomas Tarwater of Rockwood, Tenn.

*Wisconsin, Superior. Manufacturing was started this week in the new Superior Knitting Mills, located at the Bemis Bag Bldg., First St. and Hughitt Ave. This company succeeds the Nelson Bros. Knitting Works of Minneapolis and the St. Paul Knitting Works of St. Paul, Minn. They will have equipment when all is installed of 75 knitting machines and 25 sewing machines on which sweaters, sweater coats, jackets and full fashioned hosiery will be made. The plant is being operated by electric power. J. H. Sorensen, formerly proprietor of the St. Paul Knitting Works, has been elected president, treasurer and manager; Fred Sorensen, vice-president, and E. E. Galle, secretary.

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Enlargements and Improvements.

*Canada, Ontario, Toronto. A. T. Reid & Co., Ltd., 266 King St., West, will manufacture knitted ties from artificial silk for the women's trade, and accordion all-silk neckwear of the better sort for men. The department has just been started and all their machines have not been installed as yet.

Connecticut, New Britain. Some improvements are being made by the American Hosiery Co., Inc., including the installation of electric motors in different parts of the plant.

Illinois, Kankakee. About 2,000 spinning and twisting spindles will be added to the spinning department of the local plant of the Paramount Knitting Co. This will also necessitate new preparatory equipment.

Indiana, Fort Wayne. At the annual meeting of the stockholders of Thieme Bros. Co. it was voted to increase the capital stock from $150,000 to $500,000. Extensive improvements, which it is intended to make during the next twelve months, were discussed and were said to be the cause for the increase in capital. The officers were re-elected.

*Maryland, Baltimore. Men's half hose and ladies' mercerized hosiery will be manufactured on the new equipment of the Mt. Vernon Knitting Co. They now have 12 knitting machines.

Massachusetts, Boston. The Ipswich Mills have awarded contract for the erection of a new mill at their South Boston plant at a cost of about $55,000. Work will be started as soon as the old building now standing on the site has been removed and will be completed in about six months. As noted in another part of this issue, an addition is to be built to the finishing department of the main plant at Ipswich. The main office is at 201 Devonshire St., Boston.

Massachusetts, Ipswich. An addition is to be built to the finishing department of the Ipswich Mills.

*Michigan, Grand Rapids. While the deal for the purchase of the plant to the Grand Rapids Underwear Co. by the New Way Knitting Co. of Williamston has not been consummated, it is quite safe to say it will be carried through and that the New Way Knitting Co. will remove from Williamston to Grand Rapids. The capital stock will be increased to $125,000.

*Michigan, Pontiac. The Pontiac Knitting Co. suffered a loss of from $15,000 to $20,000 in the fire of June 14, chiefly in the carding and spinning departments. Reports that the company might discontinue business were absolutely incorrect, for they will repair the plant just as soon as the insurance is adjusted. At the present time, about a third of the plant is in operation. F. G. Jacobs is general manager. Knit fulled goods, including jackets, shirts, lumbermen's socks, mittens and gloves, are manufactured.

New Jersey, Dover. A large addition, 50 by 200 ft., with an ell, 50 by 49 ft., is being constructed at the plant of Paul Guenther, Inc., manufacturers of men's and women's full fashioned seamless hosiery. The enlargement will be completed during August.

New York, Amsterdam. Substantial additions will be made to the local plant of Julius Kayser & Co. The plans call for a boiler house with a capacity of two 150 h. p. boilers, a 135-foot chimney, a wing three stories high and 120 feet long, to be built on the main building. W. B. Savage of this city is the architect. The New York office is at 45 E. 17th St.

New York, New York City. The Martin Knitting Works, 31 Walker St., have added a number of new knitted necktie machines, increasing their equipment to 50 knitting machines and 6 sewing machines. They will make a further increase during July. Accordion knitted neckwear, Shaker sweaters and novelties are manufactured. Harry Phillips is manager and buyer.

*New York, Saratoga Springs. The further enlargements planned by the Clark Textile Co., as previously reported, are in the nature of machinery additions. Joseph H. Clark is president and buyer and Alfred S. Clark, treasurer.

New York, Utica. A small addition will be erected by the Frisbie & Stansfield Knitting Co. in connection with the Kendall Dept.

New York, Watertown. An increase has been made in the capital stock of the Shaughnessy Knitting Co. from $75,000 to $100,000. Large increases have been made in the past year.

*North Carolina, Durham. Details of the new cotton yarn mill for the Durham Hosiery Mills have been completed. The new building will be 3 stories high, 90 by 100 ft., and construction contract has been awarded to T. C. Thompson & Bros. of Charlotte, N. C.

*North Carolina, Newton. Plans for the new mill for the Fidelity Hosiery Mills, to take the place of the present plant, have been completed. The new mill will be of brick, two stories high, 50 feet wide by 100 feet long. Women's seamless and children's hosiery is manufactured.

*North Carolina, Statesville. In addition to the increase in equipment previously reported, the Bradford Knitting Mill, Inc., plan to add 25 new machines for making high grade combed goods. W. F. Hall is president; R. E. Clapp, treasurer and buyer, and R. L. Poplin, superintendent.

*Ohio, Toledo. The present quarters of the Dolphin Hosiery Co. have proven inadequate and larger quarters are being arranged for. Larger space will be leased at some other location or the company will erect a plant of its own in the near future. John A. Von Fecht is manager. As noted some time ago the capital has been increased from $20,000 to $50,000.

*Pennsylvania, Bangor. The Bangor Silk Knitting Co. are building an addition which will be equipped as a dye house. They manufacture ladies' silk hosiery and will increase the present equipment from 30 machines to 50 machines. These changes are to be completed within 90 days. The capital stock was recently increased to $20,000. Thos Bolger is president; J. L. Snyder, treasurer and H. A. Berendsen, manager and buyer.

Pennsylvania, Clifton Heights. The Linenwear Hosiery Co., who are now operating with a capital of $50,000, will increase to $100,000 and possibly make other changes in the company. Samuel J. Quinn is now the president, superintendent and buyer, and Chas. Crawford, treasurer. They are very busy on men's, women's, misses' and infants' fine gauge cotton, lisle and silk hosiery, seamless, full fashioned, ribbed and flat goods, and have increased their knitting equipment to 200 machines and 20 loopers. They dye their own production, also bleach and finish and sell direct.

Pennsylvania, Grill. Ladies' ribbed vests, union suits, etc., will be manufactured by H. M. Body, who is installing an equipment for this purpose.

*Pennsylvania, Middletown. It was noted in January that an addition would be built to the plant of the H. A. Romberger Mfg. Co., giving a large increase in the output. Construction contract has just been awarded to David Hatz to build a third story on the mill, the work to be completed inside of three months. Machinery to employ about 75 additional hands will be installed. The offices are located at 336 Bourse, Philadelphia.

*Pennsylvania, Mount Carmel. It is reported that Wm. F. Taubel, Inc., of Riverside, N. J., have approved plans for the proposed 2-story addition to be built in connection with the local branch plant.

Pennsylvania, Philadelphia. Bartman Bros. have removed their necktie plant from Second and Callowhill Sts. to 321 N. 8th St. and changed the style of the concern to Louis H. Bartman & Co. A small addition has been made to the equipment.

Pennsylvania, Philadelphia. Largman Bros., manufacturers of silk knitted neckwear at 11th and Arch Sts., have installed a number of knitting machines on which they will manufacture a line of high grade woolen and worsted sweater coats.

Pennsylvania, Philadelphia. Local builders are being asked for estimates on a one-story factory building, 35 by 60 feet, at 133 Harvey St., as an addition to the plant of the James R. Kendrick Co., manufacturers of surgical elastic hosiery, etc., who are operating 26 knitters and 9 sewing machines, with a branch mill at 125 E. Herman St., Germantown.

Pennsylvania, Pottsville. Donohue's Knitting Mills at 701 N. 2nd St., in which ladies', children's and misses' cotton ribbed underwear is manufactured, and which have been greatly enlarged both in buildings and equipment, are arranging for a further enlargement. A number of new knitting machines have been ordered and will soon be set up and put into operation.

Pennsylvania, Shamokin. At a meeting of directors of the Shamokin Knitting Mills it was decided to erect a dyeing and finishing plant owing to the delay experienced in sending their product to other concerns for these operations. The new structure will be of brick construction, 25 ft. wide and 60 ft. long, 3 stories high. As soon as plans can be completed the contracts will be awarded and work on the building started. At the meeting of directors the second annual dividend of 10 per cent. was declared.

Pennsylvania, Shoemakersville. It has been definitely decided to rebuild the Globe Underwear Co.'s plant which was burned about two weeks ago. The new structure will be 48 by 140 feet, one story high, of brick and cement construction. D. S. Wolfe is buyer of the concern. The original equipment was 35 knitting machines and 30 sewing machines, on which ladies' and misses' ribbed underwear was manufactured.

New Publications

(Any work noticed under this head can be obtained through the office of this journal.)

Primer of Scientific Management; by Frank B. Gilbreth; 103 pages, 5 by 7 1/2; D. Van Nostrand Co., 25 Park Pl., New York. Price $1.

The American magazine for March, April and May, 1911, contained a series of articles on "The Principles of Scientific Management" by Frederick W. Taylor. Following the appearance of these articles the publishers of the magazine received hundreds of letters from readers in all parts of the world asking for further information on the subject of elimination of unnecessary waste in human effort. These letters were handed to Mr. Gilbreth to answer and they form, with his replies, the contents of the present volume, classified under the following heads: Definitions of Terms of Scientific Management; Laws, or Principles of Scientific Management; Application of the Laws; The Effect of Scientific Management on the Workers; Relation of Scientific Management to other Lines of Activity. There is an introduction by Louis D. Brandeis. The book cannot fail to be of great value in developing an intelligent interest in the subject of scientific management.

The One Hundred Per Cent. and La Grande Facon Methods of Throwing Silks; published by the U. S. Conditioning and Testing Co., 340 Hudson St., New York.

This is a clear explanation of various methods of calculating changes for silk-throwing. The one hundred per cent. method corresponds closely to La Grande Facon method which has been in use in Europe for many years. The booklet contains a number of examples of silk throwing transactions worked out by the two methods, and a copy should be in the possession of every textile manufacturer.

Framework Knitting and Hosiery Manufacture; by James H Quilter and John Chamberlain; 352 pages, 6 by 9; Hosiery Trade Journal, 11 Millstone Lane, Leicester, England. Vol. 2. Price $5.

We have received the second volume of this work on framework knitting and hosiery manufacture, which the authors intend to cover all branches of the knitting industry. The volume begins with the tenth chapter, which is devoted to a sketch of Matthew Townsend and the latch needle, of which Townsend was the inventor. The remainder of the work is classified under the following heads: Modern latch needle circular frames; modern circular latch needle rib frames; circular knitting machine; circular knitting machines with automatic movements; plain circular automatic knitting machines; circular automatic rib knitting machines; flat knitting machines. The book contains many excellent illustrations and will prove a useful handbook for those engaged in the knitting industry.

The O. K. Guide of Embroidery and Laces; 153 pages, 5 by 8; Oswald Meyer, 3607 Boulevard, Jersey City, N. J. Price $1.

This directory contains a list of embroidery and lace manufacturers in the United States and Canada. The first edition was published in 1910 and the latest issue has been revised and extended to include much valuable information relating to this branch of the textile industry in addition to the list of establishments. The following abstract from the table of contents shows the scope of the volume: Summary of establishments, machinery and employes; production of the shuttle and hand embroidery industry; cotton yarn used in embroidery manufacturing; Bonnaz embroidery manufacturers; hand embroidery manufacturers and lace manufacturers. The statistics given in the work show a rapid growth in this industry and the directory cannot fail to be of great value.

The "Globe" Decimal Tables for the Flax and Jute Trades; 170 pages, 7 by 10; published by the Liverpool and London and Globe Insurance Co., Dundee, Scotland.

This book has been compiled and published in response to the recent decision to adopt decimal quotation for the Dundee jute trade, which has been struggling with quotations of which the following are typical examples: 1d and 7 3/8-twelfths, 1/36d and 1/16d, the problem being to combine the three to find the total price. The volume is filled with conversion tables the compilation of which represents an enormous amount of labor, and the publishers are certainly deserving of great credit for having placed the book within the reach of the jute and flax trades. It is not published for sale, but is being distributed with the compliments of the Liverpool and London and Globe Insurance Co.

Wool; by J. A. Hunter; 118 pages, 4 1/2 by 7, illustrated; Sir Isaac Fitman & Sons, 1 Amen Corner, London, Eng. Price, 60 cents.

A valuable fund of information regarding wool and wool goods is found in this little volume, which has been written for everybody, for the non-technical reader as well as for those having a knowledge of the technical side of the industry. It is one of a series of books published by the same firm and dealing with common commodities of commerce, of which coffee, tea, cotton, sugar, oil, rubber, iron and steel and silk form the subjects of the eight predecessors of the volume under consideration. The subject is considered under thirteen heads: wool and sheep,—the wool industries, wool and marketing, combing and spinning, cards and mules, cloth making, the nature of cloth, textile testing-houses and technical schools, the finance of the industry, combination and wages, standardization of qualities, products and by-products, and the personnel of the industry. The author exhibits the rare accomplishment of writing in an entertaining style on a dry technical

topic and at the same time confining himself to his subject. Much could be accomplished in dispelling popular ignorance concerning wool and wool goods by using this volume for instruction in our public schools.

BUSINESS LITERATURE

The Lunkenheimer Catalogue; The Lunkenheimer Co., Cincinnati, O.

This catalogue, forming a volume of 654 pages, contains an illustrated description of the extensive lines of engineering specialties handled by this company and which comprises brass, iron, semi and cast steel valves, whistles, cocks, gauges, injectors, lubricators, oil pumps, oil and grease cups and motor accessories.

Industrial Notes

AUTOMATIC SPRINKLERS IN CITY BUILDINGS

After a $400,000 fire on Broadway, New York, which occurred in a very long and narrow building, accessible only at the two ends and flanked on each side by taller buildings, the board of fire underwriters made recommendations that such buildings, when not equipped with automatic sprinklers, should have fireproof partitions across the building near the center, in order to localize the spread of fire.

This is an interesting recommendation, more by what it does not say than by what it does say. It appears to take it for granted that buildings equipped with automatic sprinklers will not need the fireproof subdivision, because the sprinklers will keep the fire from getting out of control. As a matter of fact, in two-thirds of all cases they put the fire out completely without human aid.

THE DRAPER COMPANY'S YARD PRIZES

The following communication has been addressed to their tenants by the Draper Company, Hopedale, Mass.:

The committee on yard prizes have had placed at their disposal the sum of $300, to be distributed for the year 1912 as follows, among the tenants, living in houses belonging to this company: One First Prize, $10; Twelve Second Prizes, $7.50 each; Forty Third Prizes, $5 each. These prizes will be awarded on the condition of the premises for the season, and the yards will be inspected by the committee from time to time. While shrubs and flowers will be given favorable consideration in judging the relative merits of competing tenements, a display of flowers will not offset a slackly kept lawn or an untidy back yard.

Ashes and garbage will be carted away at the expense of the company as soon as practicable. After this cleaning has been done, tenants will make use of the garbage cans provided for the reception of decaying matter and ashes can be thrown into the same receptacle. These cans will be emptied at the company's expense, as usual. After the final cleaning in the fall, ashes are not to be kept in the cans, and the cans are to be stored under cover.

An additional sum of $75 will be distributed among the tenants of the company living in the houses on Prospect Heights, Milford. This sum may be reduced according to the number of tenants occupying the premises during the season. It will be divided into first, second and third prizes, on about the same basis as the distribution above indicated among the other tenants.

Prizes will be awarded in November.

WILLIAM FIRTH CO. UPHELD IN SUPREME COURT RULING

Another ruling by the full bench of the Supreme Court has recently been handed down of the case of John Hetherington & Sons, Ltd., against William Firth Co. The Supreme Court upholds the previous ruling of Judge Pierce. This was a suit brought by Hetherington for breach of contract on the part of the defendant, who had the exclusive agency for Hetherington's machinery for the United States and Canada. At the first trial the plaintiff was awarded $59,500 damage and on exceptions taken by the defendant the Supreme Court ordered a new trial on damages only. Judge Pierce in the Superior Court held that Hetherington could only recover for the expenses incident to establishing a new agency and could not recover damages from loss of business resulting from the defendant's breach of contract not to compete with the plaintiff. The full bench of the Superior Court upholds this ruling.

NEW QUARTERS IN WINNIPEG

The Winnipeg Branch of the H. W. Johns-Manville Company, owing to their fast increasing business in asbestos, magnesia and electrical supplies, has found it necessary to move into new quarters at 92 Arthur St., Winnipeg, on or about June 1st. This is a six-story and basement building, 100 feet deep and 50 feet wide, and will be occupied throughout by the Company's offices and store-rooms.

PAPER-YARN FABRICS

From Consul Augustus E. Ingram, Bradford, England

I have been making further inquiries and, so far as I can learn, it is too early to say that paper-yarn textiles have passed the experimental stage in England. The Silvalin Yarn Spinning Co., of Manchester, hopes soon, so I am indirectly informed, to commence operations in this country. A textile expert connected with that company has been actively at work bringing this new material to the attention of textile manufacturers throughout the country, and trials are being made at various places by technical colleges and practical business men. Two firms in this district are experimenting, and one of them informs me that it has been experimenting for more than 12 months. This firm has been kind enough to give me small

samples of the textiles it has made. [These, marked "A" to "E," inclusive, will be loaned by the Bureau of Manufactures.]

The fabrics marked "A" and "B" are all paper, except where in "B" the white mottled effect is due to a cotton thread wound around the paper yarn. Fabric "C" is a cheap, rough trousering suitable possibly for a warm climate. Fabric "D" is a poplin effect. Fabric "E," probably the most successful of any of these experimental weaves, is a twill venetian coating, the warp showing on the face being a crossbred wool while the weft thrown on the back is of paper. The weight of this last fabric is about 20 ounces.

In regard to this last fabric, the maker said it was woven 60 inches wide; in weaving there was no shrinkage in the width but considerable loss in length, as the warp had to accommodate itself to the stiffness of the weft. My informant stated that he was as yet somewhat dubious as to success in fabrics other than heavy cloths suitable for curtains and upholstery purposes. He was satisfied as to the cheapness of the yarn and also as to its strength ordinarily. At times, perhaps owing to imperfections in spinning, the yarn proved brittle. All the yarn being experimented with, so I am informed, is obtained from Germany.

A. W. BUHLMANN ABROAD

A. W. Buhlmann, textile engineer, sailed on June 11th on the Mauretania for England and the Continent and will visit the principal European textile centers. Mr. Buhlmann makes a specialty of the equipment of finishing plants and is always endeavoring to keep in touch with the European textile manufacturers and developments in his line. He represents some of the foremost European machine builders and through his many connections abroad, has the best facilities to acquaint himself with the latest creations and novelties in the line of finishing machinery and processes.

WILL SELL DIRECT

Barger, Bains & Munn, manufacturers of seamless hosiery, of Philadelphia, will hereafter sell their own goods direct from the mill, under the supervision of J. L. Godfrey. Their product is 400 dozen ladies' and 800 dozen infants' hosiery daily.

SOLUBLE SOFTENING OIL

Many softening oils cannot stand heat; they get sour in the hot season. The Arabol Mfg. Co., 100 William St., New York, recommend their soluble softening oil for overcoming the difficulty. The oil is uniform all the year round. It is easy to handle, satisfies the requirements in every respect and easily proves its superiority to tallow and other oils and greases.

CHANGE OF LOCATION

George B. Cramer & Bro., commission merchants and mill agents for knit goods, have joined the up-town movement in New York City and are now located in large quarters in the Masonic Building, corner of 23d St. and 6th Ave. The name of the concern in the future will be George B. Cramer & Bro., Inc.

HOLLOW PLATE PRESSES

John Dennis & Co. of Lowell, Mass., manufacturers of hollow plate presses and belt machinery, are enlarging their premises by building a brick addition 38 by 70, two stories high. The press department of their business has needed more room for some time and when the new addition is completed in August it will give the desired facilities.

SHEEP INDUSTRY IN NEWFOUNDLAND

From Vice Consul Henry F. Bradshaw, St. Johns

While there are but 130,000 sheep in Newfoundland at present, a material increase in that number is expected the coming season. There are no large stock farms or ranches in the colony, the sheep being scattered over the island in small flocks owned chiefly by fishermen-farmers. The St. Johns Agricultural Society plans to go into the business of raising sheep and is making arrangements to import about 500 animals during the next three months. The St. Johns Golf Link Club has about 100 sheep on its grounds to keep the links in good condition. A woolen industry has recently been established at St. Johns.

PHILADELPHIA OFFICE

The Carrier Air Conditioning Co. announce that their Philadelphia office has been removed to 732-4 Real Estate Trust Building of that city. E. T. Murphy, M. E., will continue in charge of this territory which embraces eastern Pennsylvania, the southern part of New Jersey, Delaware, Maryland and Virginia.

STEEL SKYLIGHTS AND "STRAIGHT PUSH" SASH OPERATOR

The G. Drouve Company, Bridgeport, Conn., are meeting with marked success in the manufacture of the "Anti-Pluvious" steel, puttyless skylights and "Straight Push" sash operator for use in mills and factory buildings. The distinctive feature of the skylight is the steel framework which carries the glass, bedded on cow-hair felt, and made watertight without the use of either putty or cement. The maintenance cost is thereby reduced to a minimum, as is also the obstruction to light.

The sash operator is worked on the push and pull principle and is so simple and easily handled that a boy can open or close all the windows on one side of a building with ease, and can lock the windows in any desired position. A great advantage is that proper ventilation is easily accomplished, because it is better to have many windows open a little than a few windows open too much. The speed with which the windows can all be closed in case of fire or storm is also a valuable feature.

THE HESS-BRIGHT BALL BEARINGS

The remarkable accuracy and durability of the ball bearings manufactured by the Hess-Bright Manufacturing Co., 21st St. and Fairmount Ave., Philadelphia, Pa., were recently demonstrated by measurements of two of the Hess-Bright ball bearings taken from one of the journals of an electric car on the Atlantic City and Shore R. R. These bearings had been in continuous use for four years on a car that had been run about 175,000 miles. After this severe service the bearings were taken out and sent to George M. Bond, the noted metrological expert, of Hartford, Conn. Mr. Bond's report was as follows:

Hartford, Conn., April 4, 1912.

The Hess-Bright Manufacturing Company, Philadelphia, Pa.

Gentlemen: I submit herewith a summarized report, giving briefly the results obtained in the measurement of two Hess-Bright Ball Bearings, No. 7322, Railway Type, sent me for this purpose, the complete report of the investigation having been made March 20, 1912.

Bearing No. 1.—The mean, or average, Radial Freedom was found to be 0.000046 in.—practically nil. The mean End Play 0.00125 in. The mean, or average, Eccentricity of Inner Race was found to be only 0.00004 in.—also practically nil.

Bearing No. 2.—The mean Radial Freedom for this bearing was found to be 0.0003 in. The mean, or average, End Play 0.0097 in. The mean, or average, Eccentricity of Inner Race 0.00025 in.

The averages above given are those of readings for each, taken at each 45° division of the circle. The maximum and minimum readings in all cases being so nearly alike, practically, that the resulting averages fairly represent the condition of these bearings at the time of the test.

Very truly yours,

Geo. M. Bond.

The bearings were put back into service after the test, which had demonstrated in such a remarkable manner the wearing quality of the Hess-Bright ball bearings and the high grade of workmanship in their construction.

VEGETABLE FIBER IN WOOL

From Consul Augustus E. Ingram, Bradford, England.

The serious evils arising from the careless packing of wool have recently been strikingly illustrated by the International Committee on Vegetable Fiber in Wool. This committee has prepared a large show card, to be issued broadcast among woolgrowers, on which is shown a sample of navy blue serge spoiled by the appearance on the surface of numerous fibers of jute which have not taken the dye. Beneath the sample is a warning printed in English, French, German, and Spanish that the greatest care should be taken in keeping jute fiber out of the wool in packing. On the card are also shown samples of string that should not be used and of the kind that is least harmful. The small pieces of jute string that get into the wool cannot be picked out in the sorting process, nor is their presence in the woven fabric perceptible until after dyeing, when the only remedy is to have them removed by hand in the burling and mending process.

The vegetable-fiber committee has decided to hold an exhibition of wool packs in London during the early days of the next wool sales in July. Makers are invited to send specimen packs, showing the latest improvements and the lowest prices at which the packs can be sold. Following the exhibition there will be an international conference on the subject.

BRITISH PATENT STATISTICS

From Consul General John L. Griffiths, London

British official records show that 29,353 applications for patents were filed during 1911, as compared with 30,388 in 1910, 30,603 in 1909, 28,598 in 1908, 28,915 in 1907, and 30,030 in 1906.

There were 2,670 applications for patents received from residents of the United States, 841 from British colonies and possessions, 6,152 from European countries, of which 3,304 were from Germany, 30 from Asia, 21 from Africa, 59 from Argentina, Brazil, Central America, and Mexico; 1 from the Philippine Islands, and 19,579 from the United Kingdom.

Five applications were filed for the revocation of patents worked exclusively or mainly outside of the United Kingdom. In two of the cases revocation of the patent was decreed, in one the application was dismissed, in one the patent expired after the institution of the proceedings, and the remaining case is pending.

VALUABLE AIR CONDITIONING PATENTS ALLOWED

Stuart W. Cramer, Charlotte, N. C., with offices in New York and Boston, has recently received from his attorneys a series of patents on his air conditioning apparatus, as well as on his automatic regulators, in England, France and Germany. These are in addition to previous patents issued in the same countries a few months ago, but the latest patents are especially broad in their scope and cover forms of construction and new appliances which have not yet been put on the market, it being considered the best policy to await the issuance of the patent before marketing the apparatus.

When one considers the difficulty of obtaining broad and fundamental claims in foreign patents the scope of these present patents to Mr. Cramer illustrate clearly how thoroughly he has gone into this subject. Realizing the fundamental principles involved in successful humidification and especially in automatic regulation, he has laid a foundation with these patents for a development along the most advanced scientific and practical lines.

In addition to the foreign patents above mentioned Mr. Cramer also has a large number of patents in this country and at the present time has many applications in the office which have not yet received final action. The apparatus covered by these patents is being made ready for the market and will be added to Mr. Cramer's already extensive line. Mr. Cramer has recently issued a

trade publication on his air conditioners and automatic regulators, which describes these equipments in detail and should be of great value to all interested in this line of business. Copies of that catalogue can be had upon request addressed to him at any of his offices.

INDIAN WOOLEN INDUSTRY

From report by the Director General of Commercial Intelligence at Calcutta.

Of the five woolen mills of India, two—one at Cawnpore, in the United Provinces, and the other at Dhariwal, in the Punjab—have between them a paid-up capital of 32 lakhs of rupees ($1,036,800), and produce 82 per cent. of the total outturn of the Indian mills. These two mills weave cloth for the use of the army and police, and articles of superior quality generally, using for the high-class goods Australian wool, either pure or mixed with Indian wool.

The year 1905 was a record one both as regards the quantity and value of the woolen goods produced. In 1906 and 1907, owing to the high price of wool, there was a considerable shrinkage in production; a distinct recovery was revealed by the statistics for 1908 and 1909, and in 1910 the output was only 0.6 per cent. less than in 1905, and the value was greater than in that year. The quantity of woolen goods imported into India is, however, very much greater than the production of the Indian mills. Piece goods and shawls from the United Kingdom and Germany make up the bulk of the imports. The value of the woolen goods imported in 1910 was $9,700,000, and of the production of Indian mills $1,570,000. There are, in various places in India, factories for weaving carpets and rugs and of pattu and pashmina, but though these industries are in the aggregate extensive, they are individually small, the weaving being done on hand looms.

The following statement gives detailed particulars of the woolen industry for the years 1908, 1909 and 1910:

	1908	1909	1910
Mills at work	5	5	5
Nominal Capital employed	$14,800,000	$14,800,000	$16,800,000
Persons employed	3,511	3,392	3,442
Looms	786	809	808
Spindles	29,221	30,421	31,205
Production, pounds	3,415,763	3,954,739	4,101,706
Production, value	$14,600,000	$14,000,000	$15,700,000

The exports of woolen goods from India consist almost entirely of carpets and rugs, of which about three-fourths go to the United Kingdom, and the greater part of the remainder to the United States. The values of Indian carpets and rugs exported during 1908, 1909 and 1910 were $7,700,000, $6,870,000, and $8,000,000, respectively.

MISCELLANEOUS.

New Mills.

*Massachusetts, South Sudbury. A mill in South Sudbury has been purchased by the American Cotton Waste Co. and they are beginning to get under way. The incorporation of this concern with capital stock of $250,000 was noted several months ago and since that time search has been made for a suitable manufacturing plant with a large supply of water. Numerous properties were considered which did not fulfill all the requirements, one of which was a daily supply of 500,000 gallons of fresh water. The officers are Edward Heaton, president and Joseph P. Gillette, treasurer. These men have been in the electrical business at 31 Hartford St., Boston, under the style of the Copley Co., although Mr. Heaton was formerly engaged in the cotton waste business in England. Probably their efforts will be confined to sorting and cleaning cotton waste at first, although Mr. Heaton claims that later yarns will be spun and woven into various fabrics. It has been noted that some of the machinery equipment to be used would be imported and some will be built in this country especially for the concern.

New York, New York City. There is a rumor that a number of embroidery concerns plan to build an up-to-date bleachery for their common use in this vicinity. Patchogue, L. I., is being considered favorably as a location, as there is a concern there at present successfully doing this class of work. Few domestic embroidery manufacturers are large enough to do their own bleaching and the movement has been favorably received. It is understood that a corporation will be formed, each manufacturer of embroidery who is interested purchasing stock.

*New York, Niagara Falls. All the capital for the Niagara Falls Linen Co. has been subscribed by leading citizens of Niagara Falls, and the launching of this company has been successfully carried out. Organization has been effected with John Lyell Harper, chief engineer of the Hydraulic Power Co., president; A. B. Chase, treasurer; A. Ferguson Macintyre, secretary and sales manager, and James Meiklejohn, factory manager. Preliminary work toward the construction of the plant on Highland Ave. was started June 24, and the directors expect to begin the manufacture of goods about October 15, with an equipment of 100 looms, making linen damask piece goods, table covers, napkins and specialties. There will be a dye house for yarn and piece dyeing, and electric power equipment will be installed. An office has been opened in the Gluck Bldg. John L. Harper is the buyer.

Pennsylvania, Philadelphia. The Universal Dye Works, 3213-15 Frankford Ave., and 3212-14 Amber St., Jos. Schmits, proprietor and superintendent, are very busy dyeing hosiery and yarns of cotton, mercerized, silk and wool. Their present capacity of 900 lbs. per day will be increased by the addition of new dyeing machines, kettles, etc.

Recent Textile Patents

BOBBINS and Loopers, Mechanism for Supplying Thread to. 1,029,335. Frederick Baker, Brighton, Australia.

CLOCK for Roving or Spinning Machinery or the Like. 1,029,400. Alexander Rankeillor, Saco, Me.

COMBER. Heilmann. 1,029,128. Hormidas Jarry, Lawrence, Mass.

DETACHABLE SPINDLE. 1,028,090. Charles B. Wilson, Bartow, Fla.

DOUBLING and Twisting Machines, Attachment for Thread. 1,029,382. George F. Macfarlane, Wilkes-Barre, Pa.

DYEING APPARATUS. 1,027,729. David M. Hey, Chattanooga, Tenn.

DYE, Vat. 1,028,637. Paul Thomaschewski, Vohwinkel, Germany.

FABRIC MARKING Machine. 1,029,543. Guido Horvath, Chicago, Ill.

KNITTED FABRIC. 1,027,696. George W. Cummings, Troy, N. Y.

KNITTING MACHINE. 1,029,494. Edouard Dubied, Couvet, Switzerland.

LOOM. 1,027,996. Ernest W. Cruikshank, Baltimore, Md.

LOOM for Weaving Pile Fabrics. 1,027,995. Ernest W. Cruikshank, Baltimore, Md.

LOOM SHUTTLE. 1,027,703. Gordon J. Dustin, Fulton, N. Y.

LOOM SELVAGE Motion. 1,027,860. Charles Lavallee, New Market, N. H.

LOOM TEMPLE. 1,027,498. Jonas Northrop, Hopedale, Mass.

LOOM STOP Motion. 1,028,031. Albert G. Koechlin, Basel, Switzerland.

LOOMS, Automatic Weft-replenishing Mechanism for. 1,028,513. Jean C. Wenning, Muelhausen, Germany.

LOOMS, Bobbin for Weaving. 1,029,020. Adolf Marazzi, Kottern, Germany.

LOOMS for Weaving, Automatic Weft-replenishing of. 1,028,456. James Harling, Rosegrove, England.

SPINNING MACHINE. 1,028,480. Leon J. Morin, Taunton, Mass.

SPINNING MACHINE Drag Device. 1,027,805. George B. Black, Dundee, Scotland.

THREAD PROTECTOR and Cutter. 1,029,518. Mabel C. Templer, Hopkinton Springs, Mass.

WARP-TWISTING-IN Machine. 1,027,670. Adalbert Schuster, Glauchau, Germany.

WARP TAKE-UP, Loose. 1,027,886. Herbert W. Owen, Dover, N. H.

WINDING MACHINE. 1,028,609. Claes Ryden, Providence, R. I.

WINDING MACHINE for Yarn or Thread. 1,028,302. Frederick J Theme, Fort Wayne, Ind.

YARN GUIDE. 1,029,399. Festus S. Rand, Providence, R. I.

RECENT TEXTILE TRADE MARKS REGISTERED

60,045. Silk goods in the piece. Mark: Siren. Owner: The New York Shirt Co., New York.

60,159. Hosiery. Mark: XL. Owner: Lena Kaufman, Philadelphia, Pa.

60,188. Cotton goods and cotton dress goods. Mark: L/M. Owner: Lancaster Mills, Clinton, Mass.

61,503. Underskirts. Mark: Smartset. Owner: Heirloom Silk Garment Co., Pottstown, Pa.

60,041. Lace curtains. Mark: Quaker curtains. Owner: Quaker Lace Co., Philadelphia, Pa.

61,265. Cotton textiles for dress goods. Mark: Tamarack. Owner: Jenckes Spinning Co., Pawtucket, R. I.

61,933. Hosiery. Mark: UwareM. Owner: Shaw Stocking Co., Lowell, Mass.

62,006. Neckties, neckscarfs, etc. Mark: "Bontell." Owner: Bonwit, Teller & Co., New York.

62,482. Hosiery, undershirts, etc. Mark: Unicorn Mills. Owner: Lewis & Bashlow, New York.

63,166. Ribbons. Mark: La Comtesse. Owner: Virginia Silk Co., Richmond, Va.

60,249. Cotton piece goods. Mark: "We'll try." Owner: Fall River Bleachery, Fall River, Mass.

62,701. Plain and printed cotton piece goods. Mark: Rowena. Owner: Garner Print Works & Bleachery, West Haverstraw, N. Y.

62,652. Hosiery. Mark: Well Maid. Owner: Rosenau & Loeb, Philadelphia, Pa.

62,703. Plain and printed cotton piece goods. Mark: Veloutine. Owner: Gardner Print Works & Bleachery, W. Haverstraw, N. Y.

62,708. Plain and printed cotton piece goods. Mark: Marwuise. Owner: Gardner Print Works & Bleachery, W. Haverstraw, N. Y.

62,914. Piece goods of cotton, lawn, muslin, etc. Mark: Pride of the Loom. Owner: Kent Manufacturing Co., New York.

*South Carolina, Walhalla. The building to be erected for the Hetrick Hosiery Mills will be 2 stories and basement, 26 by 65 ft. The basement will be used for storage purposes, the first floor for boarding room and the second floor for a looping room. The paper box plant which they propose putting in will be located on the first floor of the main building.

Tennessee, Rockwood. A new mill is to be built for the Rockwood Mills, 2 stories and basement, 250 ft. long and 150 ft. wide. Lockwood, Greene & Co., Boston, are now preparing the plans. This is a $100,000 company, making women's ribbed and children's and infants' hosiery. Garnett Andrews, Chattanooga, is the buyer and manager.